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ABSTRACT

This conference sought to identify and evaluate critical developments within the contemporary apprenticeship training system. Input came from educators, scholars, federal officials, and persons from labor and management. Conference participants stated that more persons are in apprenticeships (395,000) in the United States than ever before, but there was no agreement about whether this supply of apprentices is large enough and is in the right occupational areas to prevent a skilled labor shortage in the future. Conference presenters stated that gains had been made in providing equal opportunity for minorities, especially blacks, during the past few years, through outreach programs and other nontraditional methods of recruitment. Gains have also been made by females, although the percentage of female apprentices remains low. The same is true for Hispanics, who are becoming increasingly vocal about their need for more apprenticeship opportunities. Other issues discussed by conference participants included the following: (1) whether equity for minority groups is compatible with economic efficiency; (2) whether age requirements for apprentices should be lowered to encourage more youth to participate or raised to permit women to enter later in life; (3) the propriety of financial incentives to encourage industry to expand apprenticeships; (4) the quality of apprenticeship training; and (5) linkages of apprenticeships with other training systems. (KC)

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# APPRENTICESHIP RESEARCH:
# EMERGING FINDINGS AND FUTURE TRENDS

Proceedings of a Conference on
Apprenticeship Training Held April 30
and May 1, 1980, in Washington, D.C.

Edited by
Vernon M. Briggs, Jr.
and
Felician F. Foltman

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New York State School of Industrial and Labor Relations
Cornell University

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Vernon M. Briggs, Jr.

# PREFACE

The present volume is the product of a conference held in Washington, D.C., on April 30 and May 1, 1980. The conference, entitled "Apprenticeship Training: Emerging Research and Trends for the 1980s," was the third such meeting, the first having taken place in 1966 and the second in 1973. These conferences were organized as vehicles for the wider dissemination of federally funded research on apprenticeship. They also provided an opportunity to identify new issues and topics relevant to the formulation of public policy on apprenticeship. Further, they provided an opportunity for the various members of the apprenticeship community and the research community to meet face-to-face.

At the 1966 conference, studies on the supply and demand for skilled craft workers, related instruction, joint apprenticeship committees, preapprenticeship training, state and national initiatives in administration, and the emerging concern for participation of blacks in apprenticeship programs were presented. In 1973, studies on the apprenticeship training process, labor market factors, and the progress and problems of minorities in apprenticeship training were presented. Research and policy perspectives in 1973 included consideration of experiences and policies in other nations.

The policy and research themes discussed at these two earlier conferences continue to be explored and investigated today, as a quick reading of the table of contents of this volume will show, but a significant new concern is reflected in the presentation of three studies on women in apprenticeship. These three conferences have not attempted to consider every available research study. Their common purpose has been to provide a forum where federally funded research results could be aired, debated, and perhaps even hammered into appropriate public policy.

Most of the projects reviewed at the 1980 conference were funded by the Employment and Training Administration of the U.S. Department of Labor. However, one study was reported--the General Motors experience--that was based upon private sector undertakings. Where appropriate, sessions included discussants from union or management who were able to offer responses to the research presentations based upon their practical experience.

Participants in the 1980 conference were able to hear directly from principal policymakers, the persons who convert research findings into policy actions. There were addresses by Secretary of Labor Ray Marshall, Assistant Secretary of Labor for Employment and Training Ernest Green, and the administrator of the Bureau of Apprenticeship and

Training of the U.S. Department of Labor, James P. Mitchell. These addresses are included in this volume. The fact that these officials saw fit to participate personally in this conference is testimony to the growing recognition of the importance of apprenticeship training to the nation's quest to develop the employment potential of its human resources.

An audience of about two hundred persons attended each session. Persons in attendance represented management, unions, the academic community, civil rights and women's groups, community-based organizations, state and federal government, and private consulting organizations. The number of persons who attended the conference far exceeded the original estimates of the sponsors. The size of the audience and diversity of the interest groups represented are proof of the current interest in apprenticeship research.

To conduct a national conference of this scope requires the assistance of a number of people. During the planning stage we benefited from the help of a number of officials in the U.S. Department of Labor. In particular, we wish to note the contribution of Donald Roffle, chief of the Division of Apprenticeship Research of the U.S. Department of Labor; Morris Pollak, our project monitor from the same division; and Marion Winters, secretary to the Federal Committee on Apprenticeship.

We wish to express our special appreciation to Barbara Tewey, who served as conference secretary. She was responsible for the resolution of the inevitable problems and the arrangement of the countless details that are the necessary part of any successful conference. She was also responsible for the typing of the final manuscript for this volume. We benefited greatly from the experience and assistance of Irene Grant of the Extension Division of the New York State School of Industrial and Labor Relations at Cornell, who contributed here time and her expertise in the area of conference arrangements.

Finally, we wish to indicate our sincere indebtedness to Howard Rosen, who headed the Office of Research in the Employment and Training Administration of the U.S. Department of Labor from 1964 until his retirement in 1980. From the beginning of his tenure in that post, he recognized both the significance to the nation of a strong apprenticeship training system and the paucity of research on the subject. While developing an ambitious research agenda pertaining to the "new" employment training initiatives of the 1960s and 1970s, he sparked an interest among scholars, students, and practitioners in the importance of research on the "old" programs as well. As a result parties involved or interested in apprenticeship training now have the benefit of a growing body of research. It is to the credit of Howard Rosen that there are studies around which we could organize and conduct this conference.

To all of the persons involved in the conference and to those who may read this volume, we wish to express our appreciation for your contribution to the conference and your interest in its product.

Vernon M. Briggs, Jr.
Felician F. Foltman
Codirectors of the Conference

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# CHAPTER I

# APPRENTICESHIP AND POLICY PROGRAMS FROM 1960 TO 1980

# APPRENTICESHIP POLICY AND PROGRAMS FROM 1960 TO 1980

Felician F. Foltman
Cornell University

For two decades we have witnessed an outpouring of criticism, concern, and research focused on something called apprenticeship. With the efforts to develop a more cohesive and active public manpower policy during the 1960s, apprenticeship received more than its share of attention, compared to other aspects of occupational training of vocational education. Who are the reformers? What reforms have been suggested? What observable changes in policy and practice might be associated with these suggested reforms? Here are some answers to these questions, based on personal reflection and a review of the literature.

It is interesting to note that almost all of the research, criticism, and suggested reform has been generated by labor economists, or more broadly, scholars and practitioners of industrial and labor relations. Little, if any, attention has been given to apprenticeship by psychologists and educators. Neither the 1971 review of "Personnel Training and Development" by John Campbell[1] nor the 1980 review of "Training in Work Organizations" by Irwin Goldstein[2] cite any research pertaining to apprenticeship. Labor economists, on the other hand, have been major protagonists because of their traditional professional concern with the dynamics of the labor market and their ability to influence public policy. Within the Department of Labor, Howard Rosen has made a major contribution to the modernization of apprenticeship in his role as chief of research and development from 1964 to 1980.

Every facet of apprenticeship has been criticized and questioned during these decades. There are questions of concept such as: What are the minimum standards or requirements for apprenticeship? How can apprenticeship be distinguished from other forms of occupational training? There are questions of public policy such as: What are the objectives of our national apprenticeship policy? What is the relationship of apprenticeship policy to other social policies, such as those pertaining to employment discrimination and to the public educational system? Are there skill shortages that can be remedied by increasing the output of apprenticeship training? Some administrative questions pertaining to implementation of public policy are: What are the proper roles of the federal and state bureaucracies established to implement apprenticeship law? How should apprenticeship be financed? Should it be taxed or subsidized? There are numerous questions pertaining to the training process such as: Is apprenticeship a matter of serving time or a matter of acquiring skills or competence? How much and what related instruction is appropriate?

The question of whether apprenticeship is a training process or a union strategy for control over entry into labor markets underlies any attempt to define apprenticeship. Beyond this, there is disagreement over what requirements and conditions must be fulfilled for a training program to be considered an apprenticeship. In most countries of Europe, according to Beatrice Reubens, who has conducted extensive research there, apprenticeship is part of a contractual employment relationship, an initial training system in which a firm promises to provide a broad and structured practical and theoretical training in a recognized occupational skill category. In general, these arrangements are subject to a greater degree of governmental supervision and control than in the United States. Apart from the requirement to conform to social policies such as affirmative action, fair labor standards employers and unions are relatively free to organize apprenticeship to suit their own convenience in the United States, but relatively less so in other parts of the world.[3]

If there is disagreement among trainers and scholars about the concept, there is even more confusion among persons who have not seriously addressed the question of what apprenticeship is or is not. Employers frequently respond to inquiries about their training programs by indicating they are training apprentices. Closer examination often reveals that these are on-the-job trainees who are receiving minimal supervision and no related instruction. In common usage, an apprentice is a learner or a novice rather than someone who is indentured to an employer under a specified program of work and study. Further confusion results when we refer to registered and nonregistered apprentices. To some, nonregistered apprenticeship is not apprenticeship.

What then are the essentials of apprenticeship? Need there be a formal employment relationship? Must there be a related theory or other more general academic (classroom) training component? Is it necessary to specify length of training? Or is it preferable to specify particular skills to be learned?

To expect our public policy to clarify the nature, scope and purposes of apprenticeship would seem to be logical, but unfortunately such is not the case. Like public policy in general, our national apprenticeship policy does not clearly delineate specific, measurable goals. The National Apprenticeship Act authorizes the formulation of appropriate labor standards for apprentices, encourages employers and labor to formulate programs, and encourages cooperation with states and other public agencies. Given these very general purposes, it is not surprising that evaluators and analysts reach a variety of conclusions about the worthwhileness of it all.

Public administrators have focused on numbers as an effective way to demonstrate progress and accomplishment, but the statistics reflect the above-mentioned confusion over the definition of apprenticeship.

For example, the annual Employment and Training Reports of the President, when describing the characteristics of registered apprentices in selected occupations refer to carpenters, cooks, and laborers without differentiating the occupational hierarchy of skills within these and other categories. It is not surprising that researchers and evaluators question the adequacy of statistical data pertaining to apprenticeship. Some critics argue that there are skill shortages and apprenticeship programs are inadequate. Others say that there are other skill training systems which can and do fill any such gaps.

When apprenticeship programs are asked to play a key part in alleviating complex labor market and social ills, apprenticeship policy is stretched almost beyond recognition. Some feel that apprenticeship should be more broadly applied in order to help solve the problem of appallingly high unemployment among minority youth. Others view apprenticeship as a high-quality training process for developing supervisors and skilled journeymen in occupations that require long learning periods. When public administrators in apprenticeship agencies must respond to the need for affirmative action on one hand and skill needs on the other, it is clear that they and their programs must sometimes be ambivalent. These problems are compounded when federal and state governments are unclear as to turf and jurisdiction or coordination problems exist between agencies.

Questions regarding duration of training are frequently posed by academicians. Does it really take four years to learn to be a carpenter? Related is the question of quality or cost-efficiency. Some feel that the process can be improved by incorporating newer instructional technologies and by more thorough analysis of job requirements.

Many questions have been raised concerning the amount and type of related instruction that should be provided during apprenticeship. Suggestions on this point have varied from the recommendation that related instruction be abandoned to the recommendation that it be provided in community colleges so that apprentices can fulfill their apprenticeship requirement while gaining a head start toward a college degree.

American apprentices tend to be older than apprentices in other countries. The beginning age for most apprentices in the United States has been twenty or over (with increasing numbers of programs removing upper age ceilings); in other countries apprenticeship frequently begins while persons are still enrolled in secondary school.

In an effort to help apprentices achieve higher rates of productivity earlier in their programs a variety of preapprenticeship and off-the-job-site training programs have been offered, but the question of cost-efficiency to employers continues to be an issue. Should government tax employers who do not train or subsidize those who do in order to provide further incentives? It remains to be determined whether apprenticeship is cost-effective compared to other systems of occupational training.

In a long-range research plan that was devised by Howard Rosen in 1971 and is successfully being implemented to this day, five major areas for research on the apprenticeship system were identified: preapprenticeship, administration and financing, the selection process, the training system, and continuation training.[4] Under each heading specific research areas were suggested. The plan is reviewed here because it defined the direction of research during subsequent years. It is the key to an understanding of federal involvement in apprenticeship research from 1971 to the present. Its recommendations are as follows:

A. Preapprenticeship

1. Follow up the various types of preapprenticeship programs to gather data on program results. Determine characteristics of applicants with whom success is achieved.

2. Study preapprenticeship program components in order to enhance their effectiveness in placing trainees in apprenticeship programs.

3. Make recommendations concerning the nature and extent of advance credit granted by regular apprenticeship programs to preapprenticeship participants.

4. Test the feasibility of utilizing preapprenticeship program techniques for occupational upgrading of unskilled, low-wage workers.

5. Explore the possibility of blending or linking preapprenticeship programs with secondary school curriculums to ease problems of transition from school to work for non-college-bound youth.

6. Devise a construction industry employment module for state and local government highway programs with built-in preapprenticeship to facilitate transition of disadvantaged to apprentice status.

7. Study preapprenticeship program dropouts to improve program's holding power. Also, ascertain whether dropouts are exercising new options toward better lifetime careers as a result of exposure to preapprenticeship.

B. Administration and Financing

1. Study administrative staffing of joint apprenticeship committees (JACs) to determine optimum staffing patterns.
2. Initiate cost-benefit studies of apprenticeship for training programs.
3. Study training needs of JAC personnel and devise appropriate training programs.
4. Initiate a systems study of JAC administration at all levels to improve coordination and communications and other significant aspects of JAC administrative interrelationships.
5. Study the JAC role in apprenticeship admission policymaking.
6. Design systems of record keeping and reports for documenting the training progress of apprentices and to facilitate granting and transfer of credit for apprenticeship work.
7. Explore existing methods of financing apprenticeship to determine equitable sharing of costs among employers, unions, and the public.
8. Explore approaches to financing training costs borne by individuals, including revolving loan funds, deferred payment plans, sliding scales based on ability to pay, the GI Bill, and scholarship plans.
9. Focus on small versus large employer financing problems to ensure full participation in apprenticeship by small employers.
10. Devise systems for keeping records of training costs.

11. Examine the experiences of foreign countries to determine which financing systems, appropriately revised, may be applicable to American needs.

C. Selection, Recruiting, and Retention

1. Review educational criteria and written entrance tests for apprenticeship to determine their validity and relevance to work requirements.

2. Design ways to change current practices in counseling to remove the bias against manual occupations.

3. Devise programs for training counselors in the use of informational material on apprenticeship, especially for disadvantaged youth. Set up a system to ensure the smooth flow of up-to-date apprenticeship information to counselors.

4. Develop programs to publicize the advantages of apprenticeship as a career route and to counter the loss of prestige of craftsmen.

5. Design a systematic way of determining which occupations should utilize the apprentice system.

6. Study reasons why apprentices drop out. Make recommendations on how to increase program effectiveness and, at the same time, improve satisfaction for the individual apprentice. Study the question of wage scales for apprentices.

7. Explore voluntary and compulsory construction industry plans to hire the disadvantaged (Philadelphia Plan). Determine the most effective means to initiate voluntary plans.

8. Study practices in awarding advanced apprenticeship status to apprentices based on previous experience, vocational education, preparation, etc.

9. Survey committees that grant journeymen cards to determine uniformity of criteria.

10. Study experimental approaches in government programs in apprenticeship recruitment and selection.

D. The Training Process

1. Revise classroom curriculums to achieve more relevancy to what is actually performed on the job. Improve scheduling of related instruction and work experience to better mesh theoretical and practical training.

2. Improve and update instructional methods. Determine how best to apply modern instructional technology.

3. Explore ways to ensure that instruction keeps pace with new industrial materials, equipment, and processes.

4. Devise selection instruments to identify journeymen most motivated and suited to become instructors for apprentices.

5. Explore types of additional courses, training, and pay incentives required to adequately prepare journeymen for teaching roles.

6. Experiment with regional training centers for training of apprentices in selected industries.

7. Examine the concept of a "blue collar college" to add to status and prestige of entry to craft occupations. Determine whether this concept could be expanded to facilitate shifts from blue-collar to white-collar occupations.

8. Update trade and occupational analyses to construct curriculum planning guides for related instruction and on-the-job training.

9. Initiate pilot studies to determine how much training is required for the various crafts.

E. Continuation Training for Journeymen

1. Construct guidelines for an optimum system of continuation training for journeymen to prevent obsolescence of their skills and to ensure knowledge of the latest technological innovations.

2. Determine whether continuation training can be used as a basis for horizontal and vertical mobility within trades.

3. Determine equitable approaches to financing of continuation training for journeymen.

4. Conduct follow-up studies to determine the value of continuation training as a way to promote better utilization of workers (e.g., shorter periods of unemployment, decreased incidence of worker obsolescence).

5. Devise a "lifetime career" record-keeping system, an individualized record to accompany apprentices and journeymen from job to job and ensure credit and recognition for all training received.

To round out the research program which was designed to develop a model system of apprenticeship, the paper recommended research on licensing and certification, skill requirements in various industries, manpower forecasting techniques, nonregistered apprenticeship programs, apprenticeship in Model Cities programs, and apprenticeship in government agencies.

Subsequent to the development of this research plan, bureaucratic efforts were made to increase the numbers of trainees and programs through better promotional efforts and to spread the apprentice system into different occupations and industries. The "New Initiatives in Apprenticeship" program of 1973 included consideration of the following innovations: introducing apprenticeship programs to a broader range of occupations; installing apprenticeship preparatory courses in high schools; expanding the use of union-management trust funds; reregistering apprenticeship programs every three years; establishing dual credit related instruction in community colleges; and establishing state apprentice councils in each of the fifty states. Under the sympathetic leadership of Secretary of Labor Ray Marshall, these bureaucratic initiatives were expanded and accelerated.

On the research front, investigators have concentrated on the training process, on the results achieved in apprenticeship training, and on public policy. Various studies have concluded that apprenticeship is a cost-beneficial process that merits support, even expansion. Experiences in other countries have been examined. Experiments and demonstration projects have been conducted. Labor and management officials responsible for providing apprenticeship training have been experimenting with new techniques and, in some cases, have incorporated what could be labeled revolutionary changes.

All in all, it would appear that a large-scale effort has been mounted by academicians and public and private officials to solve some of apprenticeship's presumed problems. Have these efforts been appropriate to the needs? Do the outcomes justify the activity? To this observer the answer is yes.

There is ample evidence that the efforts described above have wrought meaningful changes in the apprenticehsip field, although numerous problems remain. Some improvements are cited here:

1. Advance credit for previously learned skills and knowledge is being given automatically in programs that are oriented toward performance achievement.
2. Follow-up studies are being conducted including a current nationwide program focusing on minority apprentices who began their careers under the auspices of various outreach programs.
3. More cost-benefit analyses of apprenticehip have been published although the numbers are still small.
4. There has been experimentation with consortiums of sponsors who are unable to manage apprenticeship programs without pooling resources.
5. Studies of foreign apprenticeship have been made and lessons from these studies have been disseminated.
6. Selection and admission practices of persons to apprenticeship have changed dramatically, principally as a result of efforts of the courts and public agencies. The Bureau of Apprenticeship and Training (BAT) now advocates competency-based apprenticeship programs, where advancement depends on demonstrated ability to perform specified skills.
7. More and larger apprenticeship training programs are being instituted within federal agencies.
8. More members of minorities and women are being admitted to apprenticeship training programs than ever before.
9. There is a continuing interest among scholars in research relating to apprenticeship training processes.

10. Traditional age limits for admission to apprenticeship have been altered, and in some cases eliminated altogether.

11. The length of some apprenticeship programs has been reduced.

12. Skilled blue-collar occupations have gained new respect in society. (Thousands of applicants line up for some building trades apprenticeship programs.)

13. Modern instructional methods are being applied to apprenticeship. Modularization, television and other audio-visual aids, computers, instructor training programs, and competency-based training are examples.[5]

14. Parallel or open-shop apprenticeship programs are becoming more common and now have the approval of the federal BAT. Some apprenticeship sponsors (the Operating Engineers and the Electrical Workers, for example) have arranged for related instruction in community colleges in order to allow apprentices to obtain college credit while completing their related instruction requirement.

15. Apprenticeship training programs have been extended to new occupations, notably in health and law enforcement, and into specialized skill areas within other occupations.

16. The Federal Committee on Apprenticeship has been revitalized.

Not all of the above noted developments have been accepted or incorporated by even a majority of apprenticeship training sponsors or government officials. There are still many just causes for criticism of the apprenticeship system:

1. Preapprenticeship in public schools is still more honored as a meritorious idea than as a program or curriculum to be implemented.

2. Administration and supervision of many apprenticeship programs have changed little, except where modular or other innovative programs have been introduced.

3. A solution to financing apprenticeship programs has not yet been heard.

4. Systems or procedures for determining which occupations should be apprenticeable are lacking. (Some new occupations now use apprenticeship, but these seem to have been planned on an ad hoc basis.)

5. Revision of related instruction has been effective only in those instances where a major restructuring has been undertaken.

6. A public policy for licensing of persons who have completed apprenticeship has not been developed.

7. Planning systems and models at both macro and micro levels have been investigated, sometimes proposed, but no system for monitoring the supply of and demand for apprentices has been shown to be effective.

8. The proposed clearinghouse for information on apprenticeship training, which was first seriously discussed in the early 1960s, is still to be established.

9. Federal-state partnership in the administration of public policy on apprenticeship has not advanced beyond rhetoric.

10. Knowledge of nonregistered apprenticeship programs is skimpy.

11. The relationship of apprenticeship to public vocational education, once firmly established, now seems tenuous.

It would be presumptuous to elucidate formal conclusions from this broad and partially philosophic review of developments during the past two decades. Instead, perhaps a few modest concluding observations are in order.

Both research and the debate on apprenticeship have been monopolized by economists and public policy pundits. It would seem to be useful to somehow engage more educators, trainers, and others in these endeavors. Evaluation studies, for example, focus on outcomes while neglecting the training process. Both process and outcome studies are required.

Critics and researchers might fruitfully attempt to compare developments in apprenticeship with developments in other branches of occupational training. What progress has been made, for example, in industrial training in general, or supervisory training in particular, during the past two decades? Comparative data might help provide needed perspective.

In a related vein, it is deplorable that researchers and critics have not been as concerned with our total system of occupational training as they have with the one segment called apprenticeship. Broad questions of career, lifelong training, training for productivity, quality of work, and quality of life need everyone's attention. The roles of community colleges, public and proprietary schools of vocational education, and employer-sponsored training should be examined in light of these broad questions.

The final note is the answer to the question "Are apprenticeship training programs changing in response to new needs, developments and opportunities?" The evidence is persuasive that apprenticeship training, although thousands of years old, can and does adapt to changing times and circumstances.

## Notes

1. John P. Campbell, "Personnel Training and Development," Annual Review of Psychology 22 (1971).

2. Irwin L. Goldstein, "Training in Work Organizations," Annual Review of Psychology 31 (1980).

3. In Peru, where the author was a member of an apprenticeship evaluation task force, employers are taxed for programs that are conducted by a government agency. Apprentices are selected by the government agency, trained in residential shops and/or schools, then assigned to employers for work experience. More often than not, apprentices who complete the program do not obtain employment from these employers. In effect, the training system is a vocational school in which there is a work experience or internship requirement, but all parties refer to this training as apprenticeship.

4. U.S. Department of Labor, "Research Issues and Problems in the Apprenticeship System," unpublished paper (Washington, D.C.: Department of Labor, Manpower Administration, Office of Research and Development, 1971).

5. The new Performance Evaluated Training System of the National Joint Carpentry Apprenticeship and Training Committee is a significant case in point. Briefly, their new PETS provides very detailed photographic slides so that apprentices may learn how to complete specified tasks at their own pace after which they are tested for competency. Thousands of slides have been carefully sequenced for the main sections of carpentry. Each skill block composed of a number of slides covers both the manipulative skills and related blueprint reading, safety and other required knowledge. This system represents a complete revamping of their traditional apprenticeship system. Now, according to their description of the program, "the advancement of the apprentice shall be based upon accomplished blocks and not upon time blocks."

# CHAPTER II

# LESSONS FROM FOREIGN APPRENTICESHIP SYSTEMS: AN UPDATE OF DEVELOPMENTS ABROAD

# LESSONS FROM FOREIGN APPRENTICESHIP SYSTEMS: AN UPDATE OF DEVELOPMENTS ABROAD

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This paper stresses recent trends and developments abroad rather than the lessons from foreign experience. Given the special characteristics of American apprenticeship and the federal government's policy priorities, it is difficult to find many direct lessons from foreign countries that could be introduced without first making basic changes in the American system. Inasmuch as I sense little support for major change, I have concentrated on developments elsewhere, emphasizing the subjects of special interest in the United States.

The first part of this paper classifies apprenticeship systems of different countries and reviews apprenticeship statistics in order to place the American system in relation to systems of other countries with industrialized market economies. The second part discusses four specific topics listed on the agenda for this conference. On the assumption that these topics are currently of greatest significance, foreign approaches to them are described. The third part tentatively suggests some possible innovations for U.S. policy and procedures, based on foreign experiences.

## Broad Contrasts between Apprenticeship Systems

In investigating developments in apprenticeship in foreign countries and their relevance for American apprenticeship, the initial task is to determine whether the term apprenticeship is used uniformly in all countries. Certain core elements are present in almost all countries claiming to have an apprenticeship system. In essence, apprenticeship in most countries may be defined as an industry-based initial training system with a contractual employment relationship in which the firm promises to make available a broad and structured practical and theoretical training of some length in a recognized occupational skill category. Completion of the apprenticeship establishes skilled worker status, although it may not be the only route to skilled employment.

In a few countries the name apprenticeship is sometimes applied to systems that do not conform to these criteria. Japan, which has well-developed firm-specific training programs within enterprises, has felt the lack of a modern apprenticeship system whose journeymen could move easily among firms and industries. To meet the need, the manpower agency created broad skill training courses and skill tests, which are

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offered in public vocational training centers. These courses are called apprenticeship by Japanese officials but are excluded from this review.

A somewhat different situation appears in Scandinavia, where recognized apprenticeship exists in each country but a certain erosion of the concept is visible. It is becoming increasingly difficult to distinguish apprenticeship as such from the use of employers' premises as a part of an educational sequence in which pupils are paid as trainees or employees. This is especially true in Sweden. Denmark's Basic Vocational Education and Training Law of 1977 (EFG) establishes a system that is parallel to apprenticeship or replaces it in those occupations where management and labor agree to eliminate apprenticeship. The practical experience in the workplace provided under EFG seems like a form of apprenticeship. In Norway and Finland most apprentices have a short apprenticeship contract following on several years of full-time vocational or mixed general and vocational education. These changes in which the balance of control is shifting away from the firm are occurring with the full support of the trade unions, which have been the chief critics of traditional apprenticeship. Similar modifications of apprenticeship are visible elsewhere, but appear to be most general in Scandinavia.

Nevertheless, a large number of other industrialized countries still have strongly entrenched apprenticeship systems that fit the general definition given earlier. These countries can be divided into two basic groups. One consists of the six English-speaking countries, Great Britain, Ireland, the United States, Canada, Australia, and New Zealand. Descended from the ancient British system, the apprenticeship systems in these countries have certain common features that usually are absent in the second group--the continental European countries. There is, of course, considerable diversity within each of the two major groups of countries.

In essence, and somewhat oversimplified, apprenticeship in the English-speaking countries is a privately controlled aspect of the industrial relations system. Employers and unions have a decisive influence on the number of apprentices, the form and content of the program, length of training, the ratio of apprentices to journeymen, and apprentice hours and wages. By contrast, apprenticeship in most of the continental European countries is a public system in which collective bargaining has final jurisdiction only over apprentice wage levels, and not even that in some countries.

Some of the results of this general difference, expressed in broad comparative terms, are:

1. Government, legislation, and employers' organizations are generally less important and trade unions are more powerful in the English-speaking than in the continental European countries.

2. Apprenticeship is as much a part of the educational as the employment system in continental Europe. Ministries of education have a large administrative role. In the English-speaking countries, the employment aspect is paramount and ministries of labor or employment have primary or sole responsibility.

3. Apprenticeship intake is more limited and controlled in the English-speaking countries.

4. A narrower range of occupations is actually or potentially apprenticeable in the English-speaking countries. The primary decisions on this subject are private rather than public.

5. The duration of apprenticeship is longer in the English-speaking countries.

6. Standards of training are more diverse and less supervised in the English-speaking countries.

7. Off-the-job training and related instruction occupy fewer hours of the year in the English-speaking countries.

8. Dropout and dismissal rates generally are higher in the English-speaking countries.

9. External examinations on completion of apprenticeship are not required in the English-speaking countries and completion is judged by time served. Skilled workers' pay rates may not depend on completion.

10. Apprentice wage rates as a percent of skilled worker wage rates are much higher in the English-speaking countries, often reaching 90 to 95 percent toward the end of training. This compares to a usual maximum of 50 to 60 percent in the continental European countries.

Further distinctions should be made between American apprenticeship and that of the other English-speaking countries. While the basic similarity remains, American apprenticeship has developed under somewhat different circumstances. Without forgetting the wide diversity under the federal-state system of the United States, the most important differences between the United States as a whole and the five other English-speaking countries are:

1. The other countries all complain constantly of nationwide skill shortages, but the United States has had only brief and local experience with such shortages.

2. In the United States completed apprenticeship is only one of the ways to acquire an accepted skill status and pay; upgrading on the job is well regarded. In the other English-speaking countries, trade unions have limited the training and acceptability of skilled native workers from alternative sources and even employers have expressed dissatisfaction with upgraded or imported skilled workers.

3. The United States has not established training councils or industry training boards, which now exist in all of the other English-speaking countries. These agencies treat apprenticeship as one form of initial skill training and as one of many types of training over the worklife of individuals; they are generally dissatisfied with the domination of apprenticeship by industrial relations considerations and unenthusiastic or negative about the extension of apprenticeship to other trades. At times they have engaged in efforts to bypass apprenticeship.

4. Concentration of apprenticeship in the construction trades is greater in America than in the other countries.

5. Nonregistered apprenticeship appears to be more prevalent in the United States, although Canada also has substantial numbers of nonregistered apprentices.

6. Apprenticeship is a teenage youth program in all countries except Canada and the United States.

7. Related instruction usually or always is given during working hours and is paid time in all other countries.

8. Federal policy in the United States has placed a stronger emphasis on the participation of minority groups and females.

While these differences between the United States and the other English-speaking countries are important, such countries remain the most comparable to the United States. Somewhat greater attention, therefore, is given below to relevant trends and developments in their apprenticeship systems. The sharp division between the English-speaking and the continental European countries should not obscure the fact that many common trends are visible. However, the varied backgrounds against which these trends are occurring and the obstacles to industry-wide change in the English-speaking countries should be borne in mind, especially in considering possible transfers of experience.

## Extent of Apprenticeship

The number of apprentices in each country is the product of a complex set of variables reflecting traditional and institutional factors, demographic developments, the structure of the economy, and the pace of economic development. In table 1 the total number of apprentices in 1974 and 1977 in 17 countries is given in absolute numbers and as a proportion of total civilian employment (the most useful form for a cross-national comparison). Among these 17 advanced countries, Germany clearly leads in absolute number of apprentices, followed by Italy and Great Britain. When the countries are ranked by ratios, the leaders in both years are Austria, Germany, and Switzerland. New Zealand, Denmark, and Australia also have high ratios. Italy's relatively high ratio should be discounted for two reasons. First, training in many cases is unsatisfactory or nonexistent, since employers are motivated by an exemption from social security taxes. Second, noncompletion rates are extremely high (70 percent). In both 1974 and 1977 the United States had a lower ratio than all other countries except Sweden and Finland. If apprenticeship in the United States were on the same scale as in Austria, Germany, or Switzerland, there would currently be over 7 million American apprentices instead of a quarter of a million.

The count of the total number of apprentices is affected by definitional, statistical, and institutional factors that may produce some errors in the ranking of countries. One problem is that a form of training that is called apprenticeship in one country may be otherwise defined in another. Another problem is the extent of nonregistered apprenticeship. Some countries have training in apprenticeable occupations that conforms in all major respects to approved programs but is not registered as apprenticeship chiefly because employers dislike the governmental red tape or fear government interference. Another kind of nonregistered apprenticeship consists of training that departs somewhat

Table 1. Total Number of Apprentices as a Percentage of Total Civilian Employment, 1977 and 1974

| | 1977 | | | 1974 | | |
|---|---|---|---|---|---|---|
| | Total Number of Apprentices | Total Civilian Employment (x 1000) | Apprentices as % of Total Civilian Employment | Total Number of Apprentices | Total Civilian Employment (x 1000) | Apprentices as % of Total Civilian Employment |
| Australia | 123,200 | 6,000 | 2.05 | 131,372 | 5,736 | 2.29 |
| Canada | 96,835 | 9,754 | 0.99 | 69,386[a] | 9,137 | 0.76 |
| Great Britain | n.a. | 24,550 | n.a. | 462,940[b] | 24,767[b] | 1.87 |
| Ireland | 16,542 | 1,022 | 1.62 | 15,650 | 1,047 | 1.49 |
| New Zealand | 32,706 | 1,215 | 2.69 | 32,125 | 1,180 | 2.72 |
| United States | 262,586 | 90,546 | 0.29 | 291,049 | 85,936 | 0.34 |
| Austria | 183,659 | 2,988 | 6.15 | 163,551 | 3,010 | 5.43 |
| Germany | 1,397,429 | 24,511 | 5.70 | 1,330,768 | 25,689 | 5.18 |
| Switzerland | 151,483 | 2,817 | 5.38 | 143,065 | 2,943 | 4.86 |
| Belgium | 23,600 | 3,711 | 0.63 | 18,164 | 3,801 | 0.48 |
| France | 194,373 | 20,962 | 0.93 | 153,855 | 21,096 | 0.73 |
| Italy | 678,510 | 19,847 | 3.42 | 674,413 | 18,715 | 3.60 |
| Netherlands | 61,417 | 4,555 | 1.35 | 69,112 | 4,579 | 1.51 |
| Denmark | 55,362[c] | 2,414 | 2.29 | 59,316 | 2,355 | 2.52 |
| Finland | 3,198 | 2,101 | 0.15 | 2,811 | 2,220 | 0.13 |
| Norway | 10,000(est.) | 1,824 | 0.55 | 8,000(est.) | 1,659 | 0.48 |
| Sweden | 1,200[d] | 4,099 | 0.03 | 900[d] | 3,962 | 0.02 |

Source: Number of apprentices 1974 and 1977 from national sources. Total civilian employment 1974 and 1977 from OECD Observer, Annual report on the OECD Member Countries.

a. 12,000 estimated apprentices in Quebec have been added to published total, which excludes Quebec.

b. Number for 1971 estimated from: Great Britain, 1971 Census, Economic Activity, Part II, Tables 2, 10. London: HMSO, 1975. Total civilian employment refers to the United Kingdom in 1974.

c. 1976 data.

d. Number designated to receive government subsidy under 1959 law on apprentices. Unknown number of unsubsidized apprentices would raise Swedish total.

from approved standards. This has existed in France since a law of 1971, but may have diminished recently as government subsidies have been offered for new apprentice intake. Some nonregistered apprenticeship in the United States and Canada is of this second type, but it is not possible to state either the total amount of nonregistered apprenticeship or how it divides between the two types.

A survey in 1979 among firms belonging to the Machinery and Equipment Manufacturing Association of Canada indicated that 92 of 133 companies surveyed had apprenticeship programs; 56 programs were registered and 36 were nonregistered. Among the nonregistered firms, the reasons given for nonregistration, in order of importance, were: too much government interference or red tape; preference for their own system; no program available; too costly; too inefficient; union did not agree. Since nonregistered apprenticeship is illegal or unknown in many countries, its presence in a few countries does complicate the ranking of countries. However, independent evidence suggests that the range and ranking of ratios for the 17 countries in table 1 are reasonable. National data on both the proportion of active skilled workers who completed an apprenticeship and the proportion of youth entering apprenticeship confirm the country rankings.

The countries can be divided according to whether registered apprenticeship is considered primarily as an occupational training method for skilled workers and technicians or as a youth activity. In Germany, Austria, and Switzerland, the vast majority of all skilled persons in subprofessional occupations have completed apprenticeship and a substantial proportion of young people enter apprenticeship after compulsory schooling, with relatively few moving directly into unskilled work. In recent years 35 to 55 percent of youth have entered apprenticeship after leaving school. The proportion of persons 15 to 18 years old in apprenticeship training in Germany began to rise in 1977, after having dropped from nearly 50 percent in the early 1960s to 34.4 percent in 1976. In Austria and Switzerland, the proportion has been rising throughout. The cause of the increased proportion of youth in apprenticeship has been the reduction of the percentage of youth going directly to the unskilled labor market. Denmark, formerly a stronghold of traditional apprenticeship, currently absorbs only about 15 percent of the 16 to 20 age group, but a rather higher share for males alone. Over 20 percent of Danish youth still go from compulsory school to unskilled work, unemployment, or inactivity. Academic education at upper secondary level currently takes over 40 percent of those leaving compulsory education, usually at 16.

The English-speaking countries have a more limited number and range of apprenticeship occupations. In these trades, a high proportion of skilled workers in Britain, Ireland, Australia, New Zealand, and Canada have been trained through domestic apprenticeship, though in

Australia and Canada skilled immigrants supplement the pool. In all of these countries, there are restraints on using other means of training than apprenticeship in the selected occupations. The proportion of males entering apprenticeship after leaving school is substantial in New Zealand and Australia but it is small in Canada; relatively large numbers of persons in this category in all these countries go directly to work. While the United States conforms on this last point, completed apprenticeships are not dominant, even in the limited number of trades characteristic of the other English-speaking countries.

Sweden has a small, legally recognized apprenticeship sector, subsidized by the government, in which a stated number of places are set aside for the artisan crafts. An unknown number of unsubsidized apprentices are trained through company programs, but the chances are that the firm-specific content is fairly high in their training programs.

Full-time vocational education is much more important than apprenticeship in Belgium, Finland, France, Italy, the Netherlands, Norway, and Sweden. This is true for one or more special reasons that limit apprenticeship: concentration of apprenticeship in limited fields; deliberate policy to favor school-based training; and problems in obtaining enough apprenticeships in firms. The growth in general or academic education is another factor in some countries; it reduces the pool from which apprentices are recruited, making employers dissatisfied with the quality of apprenticeship recruits.

Nine of the 17 countries experienced a decline in total civilian employment between 1974 and 1977, but in all of these countries except the Netherlands the number of apprentices increased (see table 1). The record for the 8 countries in which employment increased from 1974 to 1977 is more mixed. Australia, the United States, and Denmark showed a decline in the number of apprentices in spite of the rise of employment. The number of apprentices increased in New Zealand and Italy, but only in Canada, Norway, and Sweden did the ratio of apprentices to employment rise from 1974 to 1977.

## Diversification of Apprenticeship

German and other European apprenticeship is and has been more diversified than that of American and other English-speaking countries. Table 2 shows the distribution of German apprentices among the main occupational divisions from 1960 to 1978. By contrast, a similar American distribution, shown in table 3, indicates a far greater reliance on the construction trades as the backbone of American apprenticeship. A finer breakdown of German apprenticeship would show relative growth in food processing, which includes bakers and butchers, and in

Table 2. Occupational Distribution of Apprentices, Germany, 1960-1978

| Year | Total Number of Apprentices (x 1000) | Percent of Total Apprentices in: Primary Sector | Fabrication and Manufacture[a] | Technical Occupations | Service Occupations |
|---|---|---|---|---|---|
| 1960 | 1269.1 | 2.8 | 50.4 | 2.0 | 44.8 |
| 1965 | 1331.9 | 2.5 | 47.4 | 3.1 | 47.0 |
| 1966 | 1371.5 | 2.4 | 46.7 | 3.4 | 47.5 |
| 1967 | 1402.5 | 2.7 | 46.0 | 3.4 | 47.9 |
| 1968 | 1392.2 | 3.0 | 45.6 | 3.3 | 48.1 |
| 1969 | 1283.5 | 3.1 | 45.7 | 3.4 | 47.8 |
| 1970 | 1270.1 | 2.7 | 46.7 | 4.0 | 46.6 |
| 1971 | 1273.1 | 2.2 | 46.5 | 4.4 | 46.9 |
| 1972 | 1302.8 | 2.1 | 47.4 | 4.6 | 46.0 |
| 1973 | 1330.8 | 1.9 | 48.7 | 4.5 | 44.9 |
| 1974 | 1330.8 | 2.1 | 49.7 | 4.1 | 44.0 |
| 1975 | 1328.9 | 2.5 | 49.9 | 3.7 | 43.8 |
| 1976 | 1316.6 | 2.9 | 49.8 | 3.2 | 43.9 |
| 1977 | 1397.4 | 3.2 | 50.1 | 2.9 | 43.8 |
| 1978 | 1517.4 | 3.3 | 50.2 | 2.8 | 43.7 |

Source: Ministry of Education and Science (BMBW), Grund-und Struktur Daten 1979, (Munich: Gersbach, 1980), pp. 88-89.

a. Includes construction trades.

Table 3. Occupational Distribution of Apprentices, United States, 1952-1978

| Year | Total Number of Apprentices[a] | Percent of Total Apprentices in: Building Trades | Metal Working Trades | Graphic Arts | Other Trades |
|---|---|---|---|---|---|
| 1952 | 172,477 | 45.2 | 8.5 | 5.8 | 40.5 |
| 1953 | 158,532 | 48.4 | 9.8 | 5.5 | 36.3 |
| 1954 | 160,258 | 51.2 | 11.9 | 6.0 | 30.9 |
| 1955 | 158,675 | 51.5 | 11.6 | 6.3 | 30.6 |
| 1956 | 174,722 | 57.7 | 11.7 | 8.1 | 22.5 |
| 1957 | 189,684 | 60.2 | 11.4 | 7.6 | 20.8 |
| 1958 | 185,691 | 59.7 | 11.0 | 7.7 | 21.6 |
| 1959 | 177,695 | 61.2 | 10.7 | 7.6 | 20.5 |
| 1960 | 172,161 | 62.0 | 14.5 | 7.4 | 16.1 |
| 1961 | 161,128 | 63.9 | 14.8 | 8.2 | 13.1 |
| 1962 | 155,649 | 64.7 | 14.3 | 8.2 | 12.8 |
| 1963 | 158,887 | 64.9 | 14.8 | 8.0 | 12.3 |
| 1964 | 163,318 | 65.5 | 15.2 | 7.4 | 11.9 |
| 1965 | 170,533 | 64.4 | 16.4 | 6.7 | 12.5 |
| 1966 | 183,955 | 62.5 | 18.5 | 6.4 | 12.6 |
| 1967 | 207,511 | 58.9 | 21.6 | 6.0 | 13.5 |
| 1968[b] | 207,517 | 55.5 | 22.9 | 5.4 | 16.2 |
| 1969 | 237,996 | 55.7 | 23.7 | 5.4 | 15.2 |
| 1970 | 269,626 | 56.5 | 21.3 | 5.1 | 17.1 |
| 1971 | 278,451 | 49.4 | 14.4[b] | 3.9 | 32.3 |
| 1972 | 247,840 | 55.9 | 13.7 | 4.5 | 25.9 |
| 1973[b] | 243,956 | 64.0 | 9.6 | 4.0 | 22.4 |
| 1974 | 280,965 | 63.8 | 9.9 | 3.6 | 22.7 |
| 1975 | 284,562 | 63.8 | 10.7 | 2.9 | 22.6 |
| 1976 | 265,647 | 62.2 | 11.1 | 2.5 | 24.2 |
| 1977 | 253,993 | 60.1 | 11.9 | 2.2 | 25.7 |
| 1978 | 263,660 | 60.1 | 12.1 | 2.0 | 25.8 |

Source: U.S. Department of Labor, Manpower Report of the President 1975 (Washington, D.C.: Government Printing Office). Unpublished data, U.S. Department of Labor, Bureau of Apprenticeship and Training.

a. At the beginning of the year.

b. Revision in reporting system introduced.

health care occupations, which include doctor's and dentist's assistants. Most apprentices in this last area are females.

## Financial Incentives

A major development in a large number of countries has been the entry or increased participation of governments in the financing of apprenticeship costs. Not only national governments but also the European Economic Community, through its Social Fund, as well as state governments in federal countries, are engaged in providing subsidies on a temporary or permanent basis. These payments are made to a variety of individuals and groups, but employers and apprentices are the leading recipients.

The forms of government subsidies are diverse. They include partial or full tax deductions, tax credits, tax exemptions and rebates, direct grants, and assumption of all or part of the capital and operating costs of training centers and schools. Public financial assistance may be directed toward all apprentices in training, all new apprentices, or the additional intake of apprentices beyond a normal level or previous number.

The rationale for governmental financial assistance is complex and differs among countries. In part, it reflects a desire to offset the observed cyclical variation in apprenticeship intake so that the number of apprentices will be maintained or increased in recessions even though employment falls. The prevention of cyclical interruptions in the training of individual apprentices is a related goal. Some countries have made apprenticeship subsidies a direct part of their youth unemployment programs. In this case, the absorption of unemployed young people has been a more important goal than the smoothing of cyclical fluctuations in apprenticeship intake, but both types of program are products of recession. It is of interest that the recent report of the Carnegie Council on Policy Studies in Higher Education[1] strongly favors subsidies to American employers who expand apprenticeship opportunities but recommends against a general program of wage subsidies for the employment of youth. On the other hand, a recent survey in the Canadian province of Ontario among persons involved or concerned with apprenticeship developed a majority view that the apprenticeship system was not a suitable vehicle for dealing with youth unemployment.

A second general reason given for government financial support is that firms train for their own needs and cannot train adequately for the needs of a whole industry or the economy. In particular, they cannot foresee future skill needs. Government, therefore, should provide incentives so that employers will raise their overall training levels in accordance with national and industry economic goals and needs. A related line of argument is that training produces economic and social benefits for society as well as for the apprentices and the firms that employ them. However, many analysts believe that the case for social benefits from specific skill training has not been demonstrated and that an analogy with the social returns from general education should not be drawn.

The geographical maldistribution of apprenticeship opportunities, both in the quantity of openings and variety of training occupations, also is a motivation for government subsidy. Austria subsidizes qualified enterprises, located in areas of the country where opportunities are scarce, if they train apprentices beyond their own immediate needs. Also subsidized are firms in other areas that accept apprentices from places with few apprenticeship openings. Germany builds youth hostels to facilitate geographic movement of apprentices.

Another motive for subsidizing various aspects of apprenticeship is to ensure that the ability of small firms to train is maintained and that improvements in the quality of training do not falter because employers decline to make the necessary expenditures. For example, a decision to reduce the duration of apprenticeship or the time spent on the job without any sacrifice in the quality of the training might be accompanied by an assumption by government of some of the cost of rearranging instruction.

It is debatable whether government assistance should be based on the argument that some firms do not train because they fear that other firms will bid apprentices away with higher wage rates at the end of the training period. This situation is generally viewed as making a case for a sharing of training costs within the private sector through a levy-grant system, rather than providing a basis for public aid. It also appears that poaching of apprentices is a lesser problem than others, such as: the inability of some firms to offer satisfactory apprenticeship training, the employment of skilled workers in industries other than those that train them, and the voluntary departure of skilled workers to better paying work outside their skill area.

Employer perceptions that training costs are rising constitute a basis for requests that government should finance part of the costs of apprenticeship, especially if it is public policy to increase apprenticeship intake. The main factors contributing to rising costs are reduced amounts of time spent at work and in direct production, increased apprenticeship pay relative to the pay of others workers, strengthened youth labor protective legislation, prolonged compulsory education (which raises the entry age and wage of apprentices), higher costs for training instructors because of elevated qualifications, briefer apprenticeships, higher turnover rates of apprentices during and at the end of apprenticeship, higher social security costs, longer vacations, and more stringent minimum standards for premises, equipment, and safety.

Since government action is the source of some of the increased cost, it seems natural to ask government to carry part of the burden. However, many employers in Switzerland, Germany, and Austria are so fearful that government money will be followed by government control that they decline to seek direct subsidies, preferring to rely on industry funds. Somewhat less resistance is shown to government funding of group or industry training centers. However, a Swiss employers' association rejected even this type of government participation on the ground that any additional public expenditures would be recouped by added taxes on business. Swiss federal authorities foresaw no federal contribution, but thought the cantons might offer limited support.

An argument frequently offered to justify increased subsidization of apprenticeship is that the public expenditure on those in full-time education is much larger per capita than it is on young people in apprenticeship, which is also a form of education. In effect, employers have been carrying part of the expenditures that might otherwise be charged to the public purse. In countries that pay grants or allowances to full-time students, it has been proposed that apprentices should receive a similar sum from the government and particularly that employers should not have to pay wages to apprentices for time spent away from the job on related instruction or other training. A related case for subsidizing apprenticeship employers arises in countries that pay employers to give vocational education students on-the-job training and work experience.

The British Federation of Building Trades Employers, in its review of the Employment and Training Act of 1973, requested by the Manpower Services Commission, recommended that the cost of proposed initial off-the-job integrated further education and training for the building crafts should be funded by government, but with industry retaining overall control of the training. Two grounds were given: equity in treatment between those in higher education and those in apprenticeship, and the heavy financial burden on employers of apprenticeship training. In requesting such public funding of the first year of apprenticeship, British employers were seeking something already in place in most of the northern European countries, although the young people in these countries usually are students in full-time vocational education rather than apprentices.

The use of government subsidies to make it possible for youth from low income families to enter apprenticeship is supported in countries where similar means-tested arrangements exist for students and where apprentice earnings are low relative to the earnings of young unskilled workers.

In summary, much of the government financial aid to apprenticeship is recent, dating from 1975 in most cases, and is influenced by the economic recession. Although usually conceived as temporary measures, these programs generally have been renewed and have even been enacted in permanent form. In the seven countries surveyed, government financial aid covered virtually every aspect of apprenticeship but was particularly aimed at making employers willing and financially able to permit an initial period of off-the-job training and later block release for related instruction. Government aid ranges from a pittance to a substantial share of the apprentice wage or of the employers' total wage costs. Incentives to employers usually cover all new apprentices, rather than all apprentices above some previously determined level; the marginal principle has not been applied in most cases. Finally, full-scale evaluations of apprenticeship subsidy programs do not exist. A program tends to be considered successful if it raises apprenticeship intake or if the number in apprenticeship falls less than the total number employed in the relevant branches. However, formal evaluation studies probably will be emerging in the period ahead.

## Financial Incentives in Australia

Australia is of interest to the United States both as a federal country in which apprenticeship legislation and administration is a state responsibility and as a country whose apprenticeship system, deriving from the British tradition, is relatively familiar. Having found that an earlier program, the National Apprenticeship Assistance Scheme (NAAS), was not effective in part because subsidies were for the first year only and were taxable, a new program called Commonwealth Rebate for Apprentice Full-time Training (CRAFT) was initiated in January 1977, after consultation with the states. Its purposes were to offset the wage costs for release time for related instruction and to encourage increased apprenticeship intake by achieving earlier productivity of apprentices. Systematic, approved full-time off-the-job training and the completion of required technical education as early as possible in the apprenticeship, or even prior to starting the apprenticeship, were the means selected to achieve earlier productivity.

CRAFT tax-free, indexed rebates to employers cover two programs: technical education courses (required related instruction) during any year of apprenticeship and off-the-job training during the first three years of apprenticeship. For related instruction release, subsidies recently were raised and changed from a flat rate to a range according to industry and the level of apprenticeship wages, thus giving employers a higher percentage of the apprentice wage. An employer is to be reimbursed in 1980 at A$14-$19[2] per day for each apprentice released during working hours to attend the first two stages of an approved basic trade course of technical education in one of the "proclaimed trades", which are apprenticeable occupations as defined by the industrial court awards, Australia's industrial relations system. The rate rises to A$18-$24 per day for the last three stages of the course if completed in the second through fourth years of apprenticeship. Half days of release time can be added up in computing amounts due to employers.

Rebates are also payable for the travel time of apprentices who spend one half or more of a working day traveling in either direction in order to attend such a block release course. A new provision gives employers a 40 percent premium on the technical education rebate if they hire an apprentice who has completed an approved preemployment training course; such a course reduces the normal period of apprenticeship by a minimum of six months. In 1978-79, the expenditure on the technical education program was A$28.4 million and 56,500 apprentices were subsidized.

The off-the-job training rebate applies to approved full-time instruction by a qualified instructor away from the production area. Approved training programs can be held in an area separate from production on the employer's premises or elsewhere. An employer who released an apprentice to attend such courses in 1980 could receive a subsidy of A$14-$19 per day for up to 260 days, of which no more than 130 could be in the second and third years combined; these rates were a considerable increase on the previous flat daily rate of A$6.50.

Some indication of the spread of subsidized off-the-job training is provided by official figures on the number of apprentice days approved for CRAFT rebate. In 1975-76, it was 775,480 days. After dropping in 1976-77 and rising in 1977-78 (but not to the 1975-76 level) the number of days reached 1,180,209 in 1978-79, indicating good acceptance of the new system. The higher rates to be paid from 1980 will probably further increase the total. In addition to rebates for releasing individual apprentices for off-the-job training, employers can qualify to have some or all costs reimbursed by serving as host trainers who receive another employer's apprentices for off-the-job training or by forming a group cooperative of small firms for training purposes.

A new marginal program offered A$1,000 to employers for each additional apprentice hired in a proclaimed trade between December 1, 1979, and June 30, 1980, above the number of new apprentices hired in the corresponding period a year earlier. The cash rebate is payable on condition that no reduction is made in the number of previously employed apprentices in the second and later years except through the normal completion of the indenture. Apprentices already subsidized under various commonwealth programs are excluded as are trainee apprentices in New South Wales (who are not indentured). CRAFT also provides taxable weekly living allowances to apprentices of A$22 per week for first year and A$9 per week for second year apprentices who must leave home in order to obtain or remain in an apprenticeship.

Several additional Commonwealth programs, drawn up in consultation with the states, provide financial support to apprenticeship under National Employment and Training (NEAT). These are preapprenticeship courses; accelerated training; group partial training in Commonwealth establishments; apprentice training advisers; and the Special Assistance Program. Through preapprenticeship courses, carefully chosen potential apprentices are able to gain exemption from one or more of the four stages of required technical education under apprenticeships, making them more attractive to employers. Some 2,000 young people in all the states took the courses in 1977 at a public cost of almost A$3 million; initial experience in obtaining regular apprenticeship was fairly good. Accelerated technical training, started in 1977 in the state of Victoria, is designed to complete the technical education (normally spread over three years) within the first two years of apprenticeship. In the first year about 1,200 entering apprentices were in this program, which makes them productive earlier and saves their employers some wage costs on release time, inasmuch as the government's rebate amount remains fixed while the apprentice's wage rate goes up in successive years. The 1977 public expenditure on this program was about A$2.5 million.

Schemes to utilize spare training capacity in Commonwealth government departments at first provided four years of government-financed apprenticeship for a small number of young people who could not find places in industry but who were expected to find private jobs after their training. This was replaced by a program providing one year of introductory training in government departments for apprentices sponsored by private employers; the latter then take over the remainder of the training. In 1978, 300 trainees were enrolled and the cost was projected at A$2 million.

The Commonwealth also has a Special Assistance Program (SAP) to aid apprentices whose employment is in jeopardy as a result of various types of business problems in the firm. The SAP gives financial aid to the firm holding the apprenticeship contract or, in more extreme cases, to another firm that agrees to take over the apprentice. This measure will continue as long as it is needed. Due to improved business conditions, 736 apprentices benefitted from this program in November 1979, compared to 884 in November 1978 and 1,182 in November 1977. Expenditure for 1979-80 is estimated at A$2 million. Finally, assistance has been given to the states to employ training advisers, who act as liaison officers between the technical colleges and employers, this subsidy, due to expire in 1978-79, was intended to stimulate the appointment of a given number of advisers whose salaries would thereafter be paid by the states.

New South Wales, the most populous of the Australian states, also has a program called Country Apprentices Training Assistance Scheme, which provides reimbursement of travel costs and partial coverage of boarding costs for apprentices residing in small or isolated communities who could not reasonably attend block release technical education courses unless they lived away from home. Such state programs complement the Commonwealth program.

The Australian government has conducted a special review of the effectiveness of the CRAFT program. A preliminary finding, favorable to CRAFT, is that there has been an upward trend in overall apprenticeship intake in the face of declines in employment in some of the sectors that are important in apprenticeship. While it is difficult to draw causal implications from these intake numbers alone, it also is significant that the New South Wales Employers' Federation attributed a 10 percent increase in intake from 1977 to 1978 to the government's financial incentives.

## Financial Incentives in New Zealand

Somewhat similar to Australia in that it has chosen off-the-job instruction as the main area for government subsidy, New Zealand uses its incentives to employers to foster block release courses and pays no subsidies for day release or other short periods. New Zealand also uses subsidies to encourage the establishment of preapprenticeship courses for aboriginal rural youth and as one part of its youth unemployment program. Apprentice wages are tax deductible for employers.

Employers who send their apprentices to approved block release courses can receive, after bearing the full cost of the first three weeks, 60 percent of the apprentice's wages for no more than 15 weeks during the first year of apprenticeship. In the second and third years the reimbursement is reduced to 50 and 40 percent, respectively, for no more than 15 weeks in each year, with the employer paying full wages during the first three weeks.

Although the principle of block release, or extended trade training, as it is called, has been accepted for all apprenticeship, budgetary constraints have prevented the system from being extended to all industries. In 1976, 6,690 apprentices attended extended trade training courses and 13,053 attended other courses, mainly of 9 weeks duration. Using training costs in carpentry, it was estimated that government expenditure would have been N.Z.$7.6 million[3] more if these 13,053 apprentices had been given extended trade training.

Employers generally believe that the government subsidy should cover the full cost of wages during the entire period of extended trade training. Some objections to block release, especially for the first year of apprenticeship, have been expressed, usually by small firms who take on apprentices only to have them leave the workplace for weeks of basic instruction. Critics also point out that since the dropout rate is highest in the first year, it might be wiser to delay this expensive form of training until the second year. In pilot tests in 1971 it was found that apprentices who had extended training in the first year were much more productive than those who did not have such initial off-the-job training. The subsidy, which cost N.Z.$724,000 in 1978-79, has not increased the number of apprentices above the expected level, but quality of training has improved.

Full-time institute-based preapprentice training has been available for Maori youth from rural districts since 1969 because apprenticeship opportunities in firms are particularly scarce in their areas. Through 1976, 3,352 Maori rural youth were enrolled in the one-year preapprenticeship course; over 20 percent of these did not complete an apprenticeship, about the same proportion as among all apprentices. For a class of 30 preapprenticeship students, the government's expenditure in 1976 was over N.Z.$180,000, averaging more than N.Z.$6,000 per student. In 1979 there were 33 Maori trade training courses enrolling 590 students. The program has won advocates who would like to extend it to other rural and even urban youth.

In 1977 the government approved pilot preapprenticeship schemes in the Auckland urban area for unemployed youth regardless of ethnic origin. Part of a special youth employment training program, the Auckland scheme offered courses in carpentry, fitting and turning, and motor vehicles. The courses ran into considerable opposition from the industry training board, the national apprenticeship committee, and the trade unions, whose prior endorsement had not been obtained. When the scheme was reviewed, these groups withheld approval because they felt that no net increase in apprenticeship resulted since the preapprenticeship students replaced those who would have been apprenticed in the normal way. It is therefore doubtful that sponsored preapprenticeship for all youth will win acceptance in New Zealand very soon.

Another program for unemployed youth, begun in January 1979, offers employers N.Z.$30 a week for one year for each apprentice they hire above the number employed on March 31, 1978. Employers can receive no other subsidy. By September 1979, 1885 apprentice contracts were in force under this program.

## Financial Incentives in Great Britain

Britain has been outstanding in its use of financial incentives to increase the number of apprentices both over the business cycle and in the longer term. The Training Services Division of the Manpower Services Commission is the agent on the government side, while the Industrial Training Boards (ITBs) conduct their own training activities and supervise training by their member firms. Since the ITBs already are engaged in their own measures to encourage apprenticeship intake by grants of funds collected through levies on employers, it is important to distinguish between government financial assistance that adds to existing ITB programs, and public aid that sets up new programs. A current estimate is that the government recently has financed 50 percent of ITB outlays on apprenticeship training. The European Social Fund of the European Economic Community also has contributed money to some of these programs, as it has to certain Irish programs to stimulate and strengthen apprenticeship training under the Industrial Training Authority (AnCO), the central Irish training body.

The chief mechanisms used by the British government to increase apprentice intake are premium grants, supplementary grants, training awards, and recruitment grants. In addition, redundant apprentices' adoption grants have been established for apprentices whose own employers cannot complete the scheduled training because of economic adversity. Premium grants are paid to firms for apprentices recruited above a norm for an industry determined by the expected level of intake, the total intake judged to be necessary and desirable, and the likely effect of incentives of different amounts. The norm is then applied to an individual firm; for example, the premium grant for a particular firm might be available for each apprentice above a level of 60 percent of average intake over the last three years. Premium grants have taken two forms: a grant for twelve months for each apprentice taken on for at least two years of training with a guarantee of a complete apprenticeship and a period of initial training off-the-job, including related instruction; a smaller grant for twelve months for each apprentice taken on for at least one year of on-the-job training.

Supplementary grants have been used to increase the level of aid offered by ITBs to employers for all of their apprenticeship intake. Applied only in one or two industries, the construction industry in particular, this measure has been used to maintain or increase apprentice intake when there is a severe recession and to stimulate employers to use the off-the-job initial training scheme instituted by the Construction Industry Training Board.

Training awards have been introduced where the other two types of grant have been unlikely to produce the desired intake by the industry. The ITBs themselves have recruited apprentices, offered first year off-the-job training in their own centers while paying these apprentices a weekly allowance, and then tried to place them with employers.

Recruitment grants have been paid to firms that agree to hire apprentices when they complete the first year in a Training Award Scheme. Such employers must complete the apprenticeship training and not reduce their intake of new first year apprentices. Failing to place the apprentice, the ITB might offer a second year of off-the-job training under continued training grants. The government's contribution has supplemented ITB funds for this activity.

Redundant apprentices' adoption grants have been offered for apprentices who have been laid off at any time before the final six months of training and who could not be transferred to another employer in the normal manner. A firm that agreed to complete the training of such an apprentice and did not reduce its own intake could receive a grant up to a maximum in the first two years of apprenticeship and slightly less thereafter.

From the beginning of the program in 1975 to the middle of 1978, 106,630 grants and awards were made. Of these, almost half, 46,600, were premium grants. There were 16,750 training awards and 23,700 supplementary grants. Official estimates are that apprentice intake was increased by about 25 percent. Well over 110 million pounds[4] have been spent by the Training Services Division, but some account should be taken of government savings on supplementary benefit, which many young unemployed people might have claimed if they had not been taken in as apprentices under the subsidy arrangements.

The special countercyclical programs had their final intakes in 1979-80 and will be succeeded by a permanent arrangement, called the Training for Skills program. This program provides that industry should decide for itself the types of training it wishes and assume almost all of the costs. Current opinion in the Manpower Services Commission is that, if in the long run industry is not prepared to pay for such training, the form of training itself may be wrong. The implied cutback in government financing, reinforced by the Conservative government's stringent financial policies, may end government assistance to apprenticeship, except in a severe recession. However, many in Britain still believe that the government must accept a substantial and permanent contribution to apprenticeship costs.

## Financial Incentives in Germany

Germany's financial contributions to apprenticeship at the federal level do not include direct payments to private employers. Some states (Laender) offer subsidies to increase or improve apprenticeship that supplement federal money or create new programs, mostly for unemployed youth. The cost of the basic vocational training year in school (BGBJ), which enrolled 10 percent of all first year apprentices in 1977 but is slated to enroll around half by 1985, is entirely borne by government. Employers benefit to the extent that the school-based year makes its graduates as well-trained and productive as ordinary apprentices in the second year, but employers complained initially that the school group needed additional training.

Confining the discussion to the federal government, two main types of government financial assistance are offered in Germany. Much of the capital and operating costs of inter-firm training centers (überbetrieblichen Ausbildungsstätten) is assumed by the government. Providing supplementary practical training, these centers also accommodate some first year apprentices who cannot find firms. Employers are not relieved of costs they previously bore, but these centers establish a means for improving training without placing all of the added costs on the firms.

The second type of financial aid, given to apprentices from low income homes, has been in place for many years. Although relatively few apprentices receive financial aid, in recent years there has been a great increase in the number of recipients relative to the total number in apprenticeship and a rapid rise in handicapped recipients as a proportion of the total number. This trend is in keeping with attempts to enlarge the participation of handicapped youth in apprenticeship.

The German government introduced a negative financial inducement to employers to increase apprenticeship. A law passed in September 1976 contained the threat that a payroll tax of up to 0.25 percent could be levied on employers (in principle, with 20 or more employees) in any year in which the total supply of apprenticeship places nationwide was not at least 12.5 percent above the total number of young people seeking places. The tax was never applied because the employer response was satisfactory overall, although regional and other imbalances persisted and the trade unions contended that the law had not been observed strictly. While new apprenticeship contracts rose markedly from 1976 through 1979, following several years of little change, the new law had little impact on reducing the residual of unsatisfied applicants for apprenticeship places (27,700 in 1976, 26,400 in 1978 and 20,200 in 1979). However, this decline, though small, is notable since it occurred during years of sharp rise in the size of the age group and the total number of applicants for apprenticeship places. This law was declared unconstitutional in 1980.

Two other countries that are strongholds of apprenticeship, Austria and Switzerland, have managed to increase apprenticeship intake without any positive or negative financial incentives to employers. Government appeals to employers to expand intake in order to accommodate the baby boom combined with the fact that many employers were unable to obtain as many apprentices as they desired. Now firms are able to find enough young applicants, in part because vocational educational institutions have not expanded rapidly enough to admit all whose first preference is for such schools.

In three countries, Finland, the Netherlands, and France, recent youth unemployment programs have included provisions to create job opportunities for youth by subsidizing apprenticeship. In Finland and the Netherlands the new programs supplement earlier subsidies to employers, but the French program is the first of its kind.

## Financial Incentives in Finland

Finnish employers have been eligible since 1967 for a subsidy for each apprentice who receives approved training and works for the firm for at least 14 days during any month; the subsidy amount declines for each year of apprenticeship. During 1975 about 3 million Finnish marks (Fmk.) were paid to employers.[5] In addition, during related instruction the apprentice receives a daily tax-free allowance (since employers are not obliged to pay wages in such periods), free meals and lodging or a travel reimbursement, and, if head of a family, a family allowance. In 1975 government outlays for related instruction (teachers' salaries and other school costs plus aid to apprentices) amounted to 6.5 billion Fmk., about 2,300 Fmk. per apprentice.

The youth employment program in 1977 provided a subsidy of 750 Fmk. per month for each new apprentice, which was added to the existing subsidy of 280 to 320 Fmk. per month in the first year of apprenticeship and 140 to 160 Fmk. in the following years. Since apprentices over 17 years of age receive at least the minimum wage, which was 1,200 Fmk. in 1976, the two subsidies gave employers a high proportion of the starting apprentice wage. The special subsidy is payable only for apprentice places offered to unemployed young people under 25 years of age; firms, municipalities, and groups of municipalities are eligible to receive the subsidy. The subsidy is paid twice a year directly to employers after approval of employer applications and a review of the apprentice's training record by the local apprenticeship board to see that satisfactory training has been given. The withholding of subsidy until training has been verified is an important feature.

Although planned as a single year program, the special subsidy has been renewed. Its favorable impact on apprenticeship recruitment is shown by a rapid rise in the total number of apprentices. An employer in a factory producing heavy machinery told the Task Force on Apprenticeship in Foreign Countries that the subsidy had induced him to hire five apprentices, his firm never having had any previously. The addition of young people to a somewhat older work force was judged a success and the employer planned to continue apprenticeship even if the subsidy ended.

The expectation of officials is that all apprentices will be covered by the subsidy as apprenticeship contracts written before February 1977 and omitted from subsidy come to an end. It may then become necessary to maintain the present subsidy level of the two programs indefinitely in order to maintain or increase apprentice intake. Another youth program under discussion in Finland, called Work Experience, is designed to be implemented in part through the apprenticeship system. It will pay employers monthly sums fairly close to those currently received for apprentices.

## Financial Incentives in the Netherlands

Prior to 1975, government subsidies to apprenticeship consisted of administrative and other grants to the industry training foundations and associated bodies and small payments to employers toward apprentice wages for time spent in related instruction and "participation education" in the case of 16 year-olds. The series of youth employment programs introduced in 1975 contained one measure that was related to apprenticeship and has been renewed annually at least through 1980. It provided that a qualified firm or other body that offered a practical training course to an unemployed person under the age of 23 could receive a subsidy towards training costs of 100 florins (Fl.)[6] per week in the first year and 50 Fl. per week thereafter. The wage of apprentices must be at least the legal minimum wage (in July 1979 the minimum was 196.20 Fl. per week for 16 year-olds and about 25 Fl. more for 17 year-olds). The subsidy thus provides about 40 percent of the minimum wage in the first year, but employers also have to pay about 25 percent of the wage bill in social security charges.

The subsidy stimulated the development of apprenticeship in business and other fields that earlier had few apprentices and probably made for a smaller reduction than would otherwise have occurred in many of the traditional apprenticeship fields. Apprenticeship in Holland declined overall from 1973 to 1976 and barely held its own in some sectors. The number of apprentices increased in 1977 and later as a result of the subsidy. Representatives of the trade unions in the construction trades said that the subsidy maintained a level of recruitment that would not exist without it. They were opposed to an increase in construction apprentices through the subsidy if the job opportunities at the end of training remained as poor as they have been in recent years.

Virtually all apprentices are now subsidized and it is believed that the removal of the subsidy might lead to a drastic reduction in intake. Employers think that the subsidy should be enlarged and made permanent. They regard the subsidy as a necessary adjustment to apprentice wages due to the treatment of apprentices as identical to young workers in the Minimum Wage Law of 1974. This was a change from the prior situation under collective bargaining and it raised the wages of some apprentices. The Employers' Federation (VNO) offers as one alternative that employers should pay apprentices only when they work in the firm. If this were done it would result in a reduction of 40 percent in apprentice wages and remove the need for a government subsidy to employers, although government might then have to pay apprentices directly for the two days a week away from the job.

Government officials, on the other hand, object to calling the program a subsidy to employers, preferring to view it as temporary aid to unemployed youth. Government officials believe that, in the longer run, industry, with some government subsidy, should be required to finance apprenticeship through a levy-grant system in which firms that do not train or train inadequately pay part of the costs of those that do train. Until youth unemployment becomes a less pressing social problem, there is likely to be no head-on confrontation between industry and government on the long-range financing of apprenticeship.

## Financial Incentives in France

An apprenticeship tax has long been paid by firms to the French government which uses the proceeds to support apprenticeship and other training activities. Firms may deduct their expenditures on approved training. In 1976, the government spent Fr. 900 million on apprenticeship of which Fr. 500 million came from the apprenticeship tax on employers.[7] Recently, the apprenticeship tax has been increased as the government sought to improve and increase apprenticeship training. To some extent, therefore, government subsidies for apprenticeship have been paid by a specific tax on employers.

In 1977, as part of the measures to deal with youth unemployment under the National Employment Pact drawn up between the government and the employers' organizations, employers who hired apprentices under contract between July and December 1977 were exempted for a maximum of two years from all social security charges, estimated at about 35 percent of an apprentice's wage. The wage of apprentices under 18 years of age starts at 15 percent of the standard minimum wage and rises to 45 percent toward the end of a two-year apprenticeship; in 1980, the standard minimum wage equaled about $3.30 an hour. To qualify for the tax exemption, employers had to hire unemployed youth (under 20 years of age) and give them a prescribed practical training in the firm plus at least 360 hours of theoretical training in a special apprenticeship center (CFA). As the period of the law ended, it appeared that over 108,000 subsidized apprentices had been recruited, a slight increase over the intake of earlier years. The total cost of the subsidy was Fr. 200 million, representing the government's contribution to the social security funds on behalf of employers excused from the taxes.

Because the public cost of all the youth employment measures in 1977-78 was considered too high, although direct training taxes on employers were estimated to have paid for one-fifth of the total cost, the 1978 law establishing the second national employment pact for youth offered an apprenticeship provision in which exemption from social security charges was only for the first year. Almost 104,000 apprentices were subsidized between July 1978 and April 1979, with the subsidy period still to go on until the end of December 1979. Additional taxes were not placed on employers for the 1978 measures, but changes were made in the distribution of the receipts from training and apprenticeship taxes in order to direct additional amounts toward the financing of the youth measures. In addition, employers were permitted to exclude apprentices as employees in calculating certain tax liabilities.

In 1979 a new law established permanent exemption from social charges for recognized artisan firms and certain small firms. (These are by far the most important employers in French apprenticeship.) The exemption from social charges is granted for all new apprentices over the whole period of apprenticeship, within a three-year limit. These employer obligations were assumed by government. A second apprenticeship law established temporary provisions for all other firms. Repeating points in the programs of previous years, the law set a longer period (from July 1979 to the end of 1981) for the subsidized recruiting period. A new provision set aside a fraction of the employers' apprenticeship tax for a fund to compensate employers for wages paid to apprentices when they attend the CFA. It is anticipated that about 115,000 apprentices will be subsidized at a cost of Fr. 460 million under each of the two programs, doubling the effect of the earlier law.

## Information, Guidance, and Placement Services

It appears that the larger the role of apprenticeship as an activity for young people leaving school, the more highly developed and specialized are the public information, guidance, and placement services dealing with apprenticeship. In Austria, Germany, and Switzerland these services for young people are heavily directed toward potential apprentices. In the other countries, especially the English-speaking countries, the transition services available to all youth, especially those directed at potential apprentices, are generally considered inadequate.

This attitude is notably prevalent among employers in industries that have difficulty in recruiting a sufficient number or the desired quality of apprentices. In Britain, however, individual industries, particularly the construction and engineering industries, have established Careers Information Units to attempt to reach potential apprentices. Implicitly criticizing the national Careers Service, which is responsible for providing the transition services to all young people in school, these units are recruiting centers for particular occupations and industries rather than efforts to help young people choose among all alternatives. In Austria, Germany, or Switzerland such industry activities would be supplementary to the efforts of the main public agencies designated to deal with all young people.

The comprehensive services provided by Germany exemplify programs in countries with a relatively large intake of apprentices. By German law, the federal government has sole responsibility for occupational information, guidance, and placement. This limits the scope both for private organizations and government agencies at subnational level. The federal employment service (ES), with its 9 regional and 146 local offices, is responsible for making the actual contacts with young people, but a large headquarters staff develops informational materials. The program begins with group information and guidance activities and is followed by individual guidance to pupils and parents, which all young people in the last grades of school can receive; it includes psychological and medical services where needed. Persons leaving school and others proceed either to the specialized apprenticeship or to the regular placement service. The apprenticeship placement service is so specialized that young people registered as seeking an apprenticeship are not counted as unemployed unless they have simultaneously registered at the regular employment service for an ordinary job. After young people list their occupational choices for an apprenticeship at the special apprentice placement office, they are given leads to firms. On request, the office will give its opinion about the suitability of a pending contract to the firm and to the young person. Placement pools are arranged when potential trainees cannot be placed locally or there is a lack of suitable candidates in the area; several employment service offices combine their activities and arrange placements even beyond the area covered by a regional office.

Young people make extensive use of these government services. In the years 1973-78, between 55 and 65 percent of all persons aged 15-19 leaving school consulted the ES for vocational guidance, not necessarily in regard to apprenticeships. The ES role in regard to placement in apprenticeships also is quite large, though the ES placement service has a smaller share than might have been anticipated from its monopoly position. Although employers, under government pressure, have been notifying larger proportions of their apprenticeship vacancies to the ES since the passage of the 1976 law on balancing supply and demand in apprenticeship, employers notified the ES of no more than two-thirds of the approximately 670,000 first-year apprenticeship places in 1978-79; moreover, some of these places proved not to be available and some notifications were given so late that the ES could not send suitable candidates.

Nor did all young people obtain posts through the employment service in 1978-79. Most obtained their places through direct approaches to firms, as in previous years. While about 70 percent of all those seeking an apprenticeship registered at the employment service in 1978-79, a substantial portion of the 70 percent secured their places by other means or entered alternative activities, such as full-time school. The proportion of notified apprenticeship places filled by the ES has declined from 63.7 percent in 1966-67 to 53.6 percent in 1977-78.

Only 37,400 of the places notified to the ES remained unfilled on its books in September 1979, and only 20,200 unsatisfied applicants for apprenticeship were still listed. This is a creditable record. Many new apprentices did not, however, obtain their first choice of occupation because the wishes of apprentices did not match employers' offerings. Apprentices' choices tend to be concentrated on a few popular occupations, in spite of their having received guidance and information. The German experience is similar to that in Austria and Switzerland and stands as a reminder of the limits on coverage and effectiveness of transition services, even when they are well-developed and financed. While a lack of such transition services has been identified as a cause of high dropout rates, it should be borne in mind that the low dropout rates in such countries as Germany, Austria, and Switzerland are not entirely due to the availability of transition services.

The countries whose experiences have been reported so far have located the transition services in schools and directed them to persons leaving school because that is the traditional age for apprenticeship recruitment in those countries. But in the United States and Canada, where the age of entry is more advanced and relatively few new apprentices come directly from high school, a different type and location of information, guidance, and placement services might be required, unless there is a policy decision to reduce the age of entry. In Canada in 1976-77, 53.7 percent of apprentices were 20-24 years old and only 7.7 percent were under 20 years. Almost 38 percent were 25-44 years old and about 1 percent were 45 or over. The Canadian government and some of the provinces are trying to discover the causes of this age distribution with a view to reducing the age of entry. Young people as well as employers and trade unions are being surveyed, but the results are not yet available.

A detailed age distribution of American and Canadian apprentices belonging to the International Association of Machinists was made in 1979; Americans accounted for almost 90 percent of the total. Over half of the machinist apprentices (58.5 percent) were 25-40 years old and another 14.9 percent were over 40 years old. The group that accounts for almost 100 percent in other countries, teenagers, constituted only 1.3 percent of the machinist apprentices; even young adults 20-24 years old made up only 25.3 percent of the total. To the extent that further studies of other occupations show similar age distributions, questions must be raised not only about the kinds of information and guidance services needed by American apprentices, but also about the sources of recruitment and whether apprenticeship is being used as a skill upgrading program for adults rather than as an initial skill training program.

It is widely believed in Canada that new high school graduates have little interest in apprenticeship or skilled blue collar jobs and that the educational system and faulty transition services play an important part in this attitude. A Canadian survey of views on apprenticeship in Ontario province in 1979 revealed that a majority of the respondents, chosen to represent all interested parties, believed that vocational information and guidance concerning apprenticeship was inadequate and had many adverse effects. Among the unfavorable consequences were a lack of awareness and understanding by youth of apprenticeship opportunities, the nature of various industries and trades, and their own aptitudes; an inability of employers to attract high quality candidates; a mismatch between employers and apprentices; increased incidence of dropouts; and reduced quality and effectiveness of training.

Other respondents to the Canadian survey stressed that employers and trade unions follow selection policies that favor older youth with a few years of work experience or adult workers for whom apprenticeship is a skill-upgrading course. They felt that a change of attitude toward recruiting high school graduates would follow only from a different perception of the characteristics of these youth. It would not result from giving the young people more information. However, improved information, guidance, and placement in the Canadian schools had widespread approval among supporters of apprenticeship and was approved even by those who doubted its efficacy when not accompanied by the other measures they recommended. Similar support for more and better transition services can be found in many countries, especially during the present period of high youth unemployment.

Counselling services are available in some countries, which help apprentices to adjust, deal with problems on the job, check that training and safety regulations are met, and, in general, reduce the number of early dropouts. The Netherlands, Denmark, and Luxembourg are among the countries that have effective services. In some countries where such counselors are provided, their insufficient number and excessive, inappropriate, or conflicting duties are a source of complaint. In countries lacking such a service, there is approval for its introduction.

## Access to Apprenticeship

The priority given by the United States to what a Canadian group calls the "social equity issue" in apprenticeship is not found elsewhere. At most, other countries, accepting the "efficiency issue" as predominant, are giving some attention to encouraging greater participation of females, minority groups, the physically and mentally handicapped, and low academic achievers. A recent survey in Ontario province, Canada, indicated that many favored the provision of more opportunities and encouragement through vocational counselling, preapprenticeship, promotional work with employers, and better workshop training in high schools, but there was little support for quotas or for the adjustment of requirements to suit special needs.

With regard to minority groups, there is little of interest to the United States in other countries' activities because of differences in the size and character of minority populations, the head start the United States has in this field, and the unparalleled policy commitment at the federal level. Somewhat more can be reported about female participation and the handicapped. No country is engaged in encouraging males to enter traditionally female apprenticeship occupations, although Sweden has a more general program along these lines.

## Female Participation in Apprenticeship

There is a fairly widespread desire to increase the proportion of women in apprenticeship, especially in countries where the proportion has been low. In the United States in 1978, 2.2 percent of apprentices were female, against 16-19 percent in Great Britain, Denmark, and Holland, 23 percent in France, 30 percent in Austria, over 35 percent in Italy, Germany, and Switzerland, and 50 percent in Finland. In Ireland only 0.2 percent of apprentices were female in 1977 and New Zealand's apprentice intake in the private sector in 1977-78 showed a female share of only 8.4 percent. The proportion of females in apprenticeship reflects the character of national apprenticeship systems as much as the progress of countries in admitting women. Countries whose apprenticeship systems engage a high share of all youth and whose apprenticeable trades include a large number of female-intensive occupations tend to show higher proportions of females than other countries.

When the question shifts from the share of females in the total to the occupational distribution of male and female apprentices and specifically to the presence of women in the male-intensive occupations, all countries find that the sexes are sharply divided in regard to apprenticeship occupations. In Finland, for example, where half of all apprentices are women, sex segregation by occupation is as highly developed as in countries with much smaller proportions of women. Several countries have recorded a marked increase in the proportion of females in apprenticeship in recent years, but without any visible shift of females into the typically male occupations. New Zealand is a case in point. In four years, from 1974 to 1978, the female share of private sector first-year apprentices rose from 4.8 percent to 8.4 percent. However, well over 80 percent of the females filled hairdressing apprenticeships in both years. In 1977-78 females were found in only 18 of the 72 apprenticeable trades in the private sector in New Zealand. Females had an even smaller role in public sector apprenticeships, constituting about 1 percent of the total number of apprentices in 1977 and 1978 and training in only 5 of the 27 apprenticeship trades.

If the policy objective is both to increase the participation of women and to raise the female share of the male-intensive occupations, then the United States has a clear leadership in policy initiatives and accomplishments. Only a few countries have explicitly announced a policy goal of opening traditionally male apprenticeships to women and fewer still have made much progress in implementing such a goal. Britain has such a program for technician training in the engineering industry. Germany's recent efforts to bring young women into apprenticeships usually filled overwhelmingly by men constitute an important exception to the generalizations above. The German interest was sparked not only by egalitarian and feminist pressures but also by recognition that during recent years of overall growth in apprenticeship places, the demand for apprentices in the female-intensive occupations had not increased at the same pace as in the male-intensive occupations. This resulted in a very disproportionate share of women among the young people who unsuccessfully sought apprenticeships; women were two-thirds of the disappointed group, although they had only 35 percent of the apprenticeships. Furthermore, since long-run earnings and career ladders in the female-intensive occupations were less favorable than in the male occupations, there was another reason to urge young women to seek the male occupations.

From 1975 to 1978 the proportion of women in seven typically male apprenticeship occupations did rise slightly in Germany; on average, the female proportion in these occupations increased from 0.3 percent to 0.9 percent of the total. Of these occupations the greatest female penetration occurred in apprenticeship training for gas station attendant;[8] the women's share was 3.8 percent in 1975; it rose to almost 7 percent by 1978. On the other hand, women made little progress in apprenticeships in motor vehicle mechanics, starting at 0.1 percent in 1975 and rising only to 0.2 percent in 1978. Overall, the small participation of women in some of the most popular and rewarding industrial occupations was a cause of concern. Chancellor Schmidt, making a special plea to parents, declared that apprenticeship should become as much a matter of course for young women as for young men.

Pilot projects to introduce women to male occupations in Germany were launched in September 1978. They were drawn up and are monitored and evaluated by the Federal Institute for Vocational Training (BIBB), which is the central policy, advisory, technical, and research body for the government, established in its present form in 1976. The BIBB carefully researched the subject in advance and designed the pilot projects so that they would be free of the common objections and would not compromise on training content or principles. Employers' organizations and trade unions, as members of the BIBB governing board, gave full approval to the project. The minister of education stated that the purpose of the experimental projects was to demonstrate conclusively that apprenticeship training of young women in so-called men's occupations could be accomplished without difficulty and could have positive benefits. Moreover, the projects would show that in the future many more young women could be expected to be interested in pursuing technical occupations in industry. The minister hoped that in about five years the concept of sex-stereotyped apprenticeship occupations would be outmoded. However, no specific goals or dates were set.

Financial support for the model programs is provided by the Federal Ministry of Education and Science, which has allocated 7 million German marks (DM7 million)[9] to cover the extra costs of participating firms and training centers. Initially three industrial firms (including the Audi automobile company) and two inter-firm training centers were chosen to receive 130 young women into 15 typically male industrial-technical apprenticeship occupations. In the second year (1979-80), 10 model programs involving about a thousand young women were established. Each program will carry the participants through the entire apprenticeship period of two to four years, according to the training rules for each occupation.

After the first year a preliminary evaluation was made of the five model programs. The main conclusions were that the women were very interested and highly motivated and performed as well as men in both the practical and theoretical areas. Their dropout rate was lower than that of men. On the testimony of the training instructors, the presence of the women established a better work atmosphere than in an all-male training group. The training instructors also found none of the psychological or skill training problems that conventional wisdom had foretold and none were anticipated with an expansion of numbers. Those parents who had initial skepticism about such programs for their daughters now were less doubtful. In the towns where the model programs had been launched, there had been a spontaneous increase in requests by young women leaving school for apprenticeship places in the industrial-technical occupations. In general, the first year of the programs had fulfilled all expectations and encouraged further efforts.

It will be of interest to watch German progress in this area, inasmuch as their approach and methods differ sharply from our own. We will want to see whether government-initiated and financed pilot programs actually will raise the overall participation levels of German women in the male occupations to rates we would consider acceptable after the end of the pilot programs and subsidies. It is unlikely that government financial subsidies will be continued when the pilot programs end, inasmuch as the findings point to no additional employer costs beyond initial changes in some physical facilities. The timing of the German effort is felicitous since an impending decline in the number of potential apprentices for demographic and educational attainment reasons will make employers more receptive to females in typically male occupations.

Some aspects of the German approach offer lessons for the United States. The prior research and planning by a central group of experts, the careful monitoring of the pilot programs, the widespread dissemination of results, and the availability of technical assistance can reduce the problems of those firms that decide to expand female recruitment and can minimize the cases where inappropriate approaches or outright abuse weaken the entire program.

## Apprenticeship for the Handicapped

Those countries on the continent whose apprenticeship systems cover a wide range of occupations and skill levels (including many two-year apprenticeships) are in a better position than the English-speaking countries to make special arrangements for the entrance of physically, mentally, and socially handicapped youth and low academic achievers. Two approaches are used. Special preparatory classes are conducted, sometimes as preapprenticeship. More important are the deliberate modifications of entry requirements, training tasks, time allotted to each training aspect, ratio of apprentices to trainers, and other factors in the workplace and school. Intermediate credentials are provided for those who cannot go the whole distance.

The German government has recently introduced programs of this kind for the physically, mentally, and socially handicapped. These are administered with the cooperation of the chambers of employers, which have day-to-day responsibility for apprenticeship. Relaxation of standards and modification of various aspects of apprenticeship are joined to special preparatory measures to increase the chances of pupils leaving the Sonderschule (special schools). The ultimate objectives, still to be realized, are that access to apprenticeship for the handicapped will be as good as that of persons coming from regular schools and that their performance during apprenticeship training and subsequent job placement will also be equal to that of ordinary entrants.

## Concluding Observations

A cautious approach should be taken toward the advisability and possibility of transferring foreign apprenticeship institutions and practices to the United States, given the differences between American and other apprenticeship systems in structure and objectives. It also should be recognized that some American aims are not as strongly established abroad. For example, other countries offer little guidance on the extension of apprenticeship into occupations relating to the environment or energy conservation. There are, however, a few areas in which foreign developments and trends in apprenticeships suggest some possible directions for United States policy. These can be listed under three main points, each of which has been designated a goal of national policy: an increase in the total numbers in apprenticeship; the introduction or greater use of apprenticeship in certain occupations; and changes in the role and functions of the Federal Committee on Apprenticeship (FCA).

An increase in the number of apprentices would involve improved recruitment and retention. Based on foreign experience, efforts to stimulate recruitment by financial incentives to employers appear to be a reasonable approach. It is doubtful that demonstration projects or appeals to employers would be productive or that payroll taxes could be threatened, as in Germany. To be effective, the amount of a wage subsidy probably should equal 35 to 50 percent of the total apprentice wage, including existing payroll taxes. It is entirely feasible to limit the subsidy to apprentice intake above a stipulated level for firms that already have registered apprenticeship programs. As a lure to other firms, a special premium could be offered for companies instituting new registered programs. However, German experience indicates that growth in the number of apprentices occurs largely within firms already training some apprentices.

If a program is launched, a time limit on the recruitment period could be set and a trial program could be run with built-in monitoring and evaluation. Such a program can be established independently or as part of a youth employment program, in which case the age, family income, and employment status of the potential apprentices can be more directly specified.

Better retention of apprentices through the training period probably can be achieved by a combination of the methods that have been shown to account for the much lower dropout rates in certain foreign countries. Completion has a relatively low value for those in the last year in the United States, since neither skilled status nor large wage increments depend on actual completion of apprenticeship. It has been found that the substitution of competency-based progress for fixed time periods leads to less dropping out throughout the apprenticeship. Reduction of the average age of entry might result in a higher completion rate since the pressure of family responsibilities and need for income would weigh less heavily on younger apprentices. Because the construction trades account for so large a part of American apprenticeship, job security or alternative arrangements over seasonal and cyclical downturns are important ways of reducing both terminations and dropouts.

It is an American goal to introduce apprenticeship into occupations in which it is now unknown and to obtain its greater utilization in occupations where it is a marginal method compared to other training methods. Foreign experience suggests a limited range of occupations and selected means to achieve this aim. All of the other countries, including all the English-speaking countries, use apprenticeship to train mechanics employed in repair work on motor vehicles, office machines, television and radio, and household appliances. The result appears to be a higher standard of competency in the repair work, greater consumer protection and less fraud, a longer life for the machines and equipment, and cleaner and safer workplaces because of adherence to the standards imposed on apprenticeship training.

Lacking the tradition to train for these occupations through apprenticeship, American employers are unlikely to respond widely, even to generous financial incentives. A more promising approach might be to combine financial incentives with compulsory competency testing or certification through completion of an approved apprenticeship. This latter method has been in use in Ontario, Canada for many years for service occupations that directly affect consumers; practitioners in a designated list of occupations must have completed an apprenticeship, unless they fall into a special category. A recent survey showed strong support from industry and others for this system.

A consideration of the potential role and functions of the Federal Committee on Apprenticeship affords an opportunity to weigh the value to the United States of several specific features of other countries' systems. An obvious beginning is to strengthen the FCA itself by providing a full-time director and a small professional staff. There may be a need in the United States for a National Training Council, organized along the lines of the FCA and the National Commission for Employment Policy, possibly as an adjunct of the latter. Among its functions would be the coordination of apprenticeship with vocational education and with training beyond the initial level. Even if the United States does not face skill shortages of such magnitude as to require a National Training Council on that account, such a council could aid in the coordination of various types of training, the provision of a meeting ground for the education and manpower agencies at federal and state level, and the lessening of the institutional isolation characteristic of American apprenticeship. A link might be forged between the National Commission for Employment Policy and the FCA if no National Training Council is established.

The FCA could establish a national center for research, experimentation, and demonstration projects in apprenticeship and for the dissemination of information. It is possible that the nucleus for such a center could be found in the National Center for Research in Vocational Education, which has taken an interest in apprenticeship but currently is primarily concerned with school-based programs. Alternatively, one or more apprenticeship clearinghouses could be used.

The FCA also could take a leading role in the National Association of State and Territorial Apprenticeship Directors. The FCA could urge state policymakers to discuss such subjects as the harmonization of state laws and practices, the institution of effective training practices, the portability of credentials, the improvement of efforts to publicize apprenticeship among employers and guidance counselors in schools, and the increased use of paid work time for related instruction.

It is not suggested that an enlarged and improved American apprenticeship system will automatically follow from these organizational measures, but the experience of other countries indicates a correlation between supportive infrastructures and larger and more pervasive apprenticeship programs.

## Notes

1. Carnegie Council on Policy Studies in Higher Education, *Giving Youth a Better Chance: Options for Education, Work and Service* (San Francisco: Jossey-Bass, 1979).

2. In February 1980, the Australian dollar was worth U.S. $1.11.

3. In February 1980, the New Zealand dollar was worth U.S. $0.98.

4. In February 1980, the British pound was worth U.S. $2.30.

5. In February 1980, the Finnish mark was worth U.S. $0.27.

6. In February 1980, the Dutch florin was worth U.S. $0.52.

7. In February 1980, the French franc was worth U.S. $0.25.

8. Apprenticeship training for this occupation goes far beyond the tasks we associate with this job. The training is likely to include instruction in how motor vehicles are constructed and operated as well as how to carry on all of the business functions associated with owning and operating a filling station.

9. In February 1980, the German mark was worth U.S. $0.58.

# RESPONSE

Felician F. Foltman
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Beatrice Reubens provides us with an interesting review of apprenticeship developments abroad, based on her extensive travels and research in many parts of the world. She notes in the very first sentence that recent reviews of trends and developments abroad provide little or no emphasis on lessons to be learned from foreign apprenticeship systems. In fact, not only are trends stressed here, but lessons are derived and policy recommendatons are made as well.

Readers are reminded that apprenticeship can be defined variously. In the paper, apprenticeship is defined very broadly as "an industry-based initial training system with a contractual employment relationship in which the firm promises to make available a broad and structured practical and theoretical training of some length in a recognized occupational skill category." Apprenticeship in Japan and the Scandinavian countries is said not to fit this definition. Given the extremely broad nature of the definition, it is difficult to distinguish vocational education or other forms of occupational preparation from apprenticeship.

A useful distinction is made between the English-speaking countries, in which apprenticeship is largely a privately controlled aspect of the industrial relations system, and continental European countries, where it is a publicly controlled system. These differing perspectives produce changes in every aspect of apprenticeship, beginning with selection and continuing through to the granting of credentials upon completion. A major difference between the United States and most other countries is that related instruction is almost always given during working hours in European and other countries but is generally given after working hours in the United States.

I find least interesting or useful the elaboration on the extent of apprenticeship in various countries. After pointing out that the United States has not faced nationwide skill shortages like those of other countries, and after properly discounting the statistics, she proceeds to essay numerical comparisons. The United States would have millions of apprentices in training if apprenticeship were on a scale as in Austria, Germany, or Switzerland. As she emphasizes elsewhere, there are so many differences in training systems, assumptions, size, industrial relations, and other variables that the comparison is something less than significant.

Much more useful is the analysis of the experiences of other countries in financing apprenticeship costs. After tracing the logic of financial assistance as perceived in other countries, she then reviews the specific approaches taken in seven countries. The rationale for governmental financial assistance differs from country to country, but in general concerns for youth unemployment and for the needs of the economy prompt the decision to subsidize. When financial support has been determined to be required, it is provided either as a bonus or subsidy, as a rebate on taxes, or as financial aid to low income apprentices. What is surprising in this account of financial inducement is that Austria and Switzerland, two small countries that have large and successful apprenticeship programs, do not provide financial incentives.

It is disappointing to find that the author does not attempt to generalize any conclusions from the variety of financing policies that she reviews. On the other hand, she does indicate some possible directions for U.S. policy, two of which, as noted below, are largely unrelated to her data and analysis. She asserts that the number of apprentices in the United States can be increased by judicious use of financial incentives, but the question of whether we need additional apprentices is not answered. Another proposed direction for U.S. policy is to introduce and use apprenticeship in occupations that are now not covered or are only partially covered, such as motor vehicle repair, and television and appliance repair. Two questions occur. Don't U.S. programs include these occupations? They do. And why is the recommendation being made? No justification is given in the paper. Finally, it is recommended that changes be made in the role and function of the Federal Committee on Apprenticeship. Presumably, this recommendation flows from comparisons with similar bodies in other countries. Unfortunately again, there are no supporting data.

It should be clear that the criticisms raised here are relatively minor when viewed in the context of the paper. Indeed it is less a journal article and more a monograph describing foreign apprenticeship systems. As such it is a mine of information that will be probed by scholars and policymakers for some time to come.

# CHAPTER III

# FINANCIAL INCENTIVES FOR APPRENTICESHIP

# FINANCIAL INCENTIVES FOR APPRENTICESHIP

William S. Franklin
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Whenever advocates of apprenticeship gather to discuss ways of expanding the system into industries and occupations in which it is presently rare or nonexistent, the talk eventually turns to the prospect of using financial incentives, usually in the form of tax credits, to induce employers to adopt apprenticeship training. In the last 15 years, financial incentives have been recommended by representatives of organized labor, employers, the Bureau of Apprenticeship and Training (BAT), the Federal Committee on Apprenticeship (FCA), and researchers. A recommendation that their use be explored was one of the Carter-Marshall Initiatives for Apprenticeship in 1977. To date, however, the use of employer subsidies has never passed the talking stage. As a result, the United States continues to subsidize its apprenticeship programs less than almost any other industrialized country. Perhaps coincidentally (and perhaps not) the United States also trains a smaller percentage of its skilled work force in apprenticeship than most industrialized nations, in spite of the recognized superiority of apprenticeship over other forms of training.

It is time to begin discussing seriously the use of employer subsidies to encourage the spread of apprenticeship. I would hope to see the beginning of an exchange of views and information on the subject among employers, unions, researchers, and public policymakers. Such an exchange should produce: substantial consensus over the characteristics of an ideal subsidy program; an appreciation of the problems of equitable, efficient design and administration of various kinds of subsidy programs; realistic estimates of the prospects for success of each of the multitude of possible subsidies; and basic agreement over the elements of a model program that can be tested in a few occupations and industries and, if successful, implemented nationwide. In this paper I will try to initiate this discussion by summarizing my own impressions and reflections regarding the problems of putting together a program of financial incentives for employers who adopt apprenticeship.

## The Economic Rationale for a Subsidy Program

It may fairly be asked, if apprenticeship is such a good system of training, why should employers be bribed to engage in it, and in any case, why should the public foot part of the bill for training, when the benefits accrue to the private sector? These questions have several answers. To begin with, many employers view any form of training as an expensive method of meeting their requirements for skilled labor. Employers who find it cheaper either to pirate skilled personnel away from their competitors, switch to less skill-intensive methods of production, or export skilled jobs to other countries presumably will not be keen on incurring the burdens of training. However, it is in the public interest to persuade employers to train rather than choose any of the alternatives to training. Pirating bids up the wages of skilled workers and thereby contributes to increased labor costs and inflation; diluting the skill mix lowers workers' productivity and earning power; exporting skilled jobs increases unemployment and worsens the balance of payments. Public assumption of part of the costs of apprenticeship training can lower the cost of training to employers to a level at which it is more profitable to train than to meet skill requirements in socially less desirable ways.

Conventional wisdom indicates that while employers are glad to hire relatively productive advanced apprentices, they prefer not to take on unproductive first-year apprentices. Obviously, since there can be no advanced apprentices without first having beginning apprentices, employer reluctance to hire beginning apprentices is one of the reasons for the slow spread of apprenticeship. Subsidization of the wages of beginning apprentices would be a direct and visible means of lowering costs to a level commensurate with productivity and might overcome the unwillingness of many employers to train apprentices.

Another important consideration is that, in industries in which employees can move relatively freely from firm to firm, employers are loath to incur the costs of training workers who can easily be attracted away by competing firms. However, if other employers are also engaged in training, any given employer should be less reluctant to train because (1) he can see that his competitors have chosen to train, rather than steal, skilled workers, and (2) if he does lose the workers he has trained, he may be able to attract skilled workers away from other firms in the industry. A subsidy program designed to encourage industry-wide training efforts such as those in union construction could help to overcome individual employers' fears of losing the workers they have trained and thus reduce their reluctance to incur training costs.

Finally, the fact that there are beneficial social effects of apprenticeship is good reason for the public to underwrite its share of the cost of training apprentices. Effective training (1) reduces shortages of skilled labor, thereby reducing upward pressure on costs and prices; (2) increases workers' productivity, thus enabling American industry to compete more effectively in world trade and improving the nation's balance of payments; and (3) raises workers' employability, thereby reducing unemployment and the costs it inflicts on the public.

Because the public benefits from apprenticeship, the public should pay a portion of the cost of the system; in fact, if the public does not pay for the benefits it receives, there will be a suboptimal amount of investment in training by employers.

## Some Criteria for Evaluating Employer Subsidies

There are at least eight characteristics that a subsidy program ought to possess and that can be used as criteria for evaluating the relative merits of different subsidy schemes, including those mentioned later in this paper.

1. A subsidy should be effective in persuading employers either to adopt apprenticeship training or to increase the number of apprentices trained in existing programs.

2. It should be cost-effective relative to other methods of expanding apprenticeship.

3. It should impose as small an administrative burden on employers as possible.

4. It should be marginal; that is, it should be paid only to employers who expand existing apprenticeship programs or adopt new ones. Otherwise most of the subsidy funds will be wasted in payments for training efforts that are already being made.

5. It should be temporary; government funding should be phased out in favor of private financing after several years.

6. It should preserve the private, voluntary nature of the American apprenticeship system.

7. It should not undermine the high quality of training that typifies apprenticeship in the United States.

8. It should be perceived as equitable by the apprenticeship community.

There are probably other characteristics that would also be desirable in a subsidy program--for example, reducing dropout rates, meeting affirmative action goals, or encouraging employers to register nonregistered programs. However, the absence of those traits would not be crucial, whereas the failure to meet any one of the eight criteria I have suggested would, in my estimation, be grounds for rejecting almost any proposed subsidy scheme. The only possible exception might be the preference for temporary subsidization; if continuing subsidies proved to be superior means of expanding apprenticeship it would not be necessary to insist that government funding be phased out.

Unfortunately, it may not be possible for any subsidy scheme to meet all the criteria listed above because some of those criteria may be mutually exclusive of each other. It is possible, for instance, that the most cost-effective program may actually have little overall effect on the spread of apprenticeship. Any marginal or incremental subsidy must specify an eligibility threshold for the employment of apprentices that an employer must exceed in order to qualify for subsidy payments. If the threshold were 105 percent of the previous year's employment, an employer would have to increase hiring of apprentices by more than 5 percent to qualify for benefits. Such a high threshold would eliminate windfall payments to employers who would have increased their hiring of apprentices by 5 percent or less even had there been no subsidy, but it would also reach fewer firms--and hence have a smaller impact--than a program with a lower threshold. By contrast, a subsidy with a 95 percent threshold would reach a great many more firms, including some that would otherwise have laid off apprentices, but the volume of windfall payments would also increase. In other words, programs with low thresholds should be expected to have relatively large effects on the spread of apprenticeship, but they would be less cost-effective than programs with higher thresholds because of their high volume of windfall payments. Broad impact may be attainable only at the sacrifice of cost-effectiveness, and vice versa.

Another serious problem is that of implementing a marginal subsidy program in an equitable fashion. Under a marginal scheme, employers who adopted apprenticeship for the first time would be eligible for subsidy payments for all of their apprentices because all would be new apprentices. Employers with existing programs, however, would be eligible for subsidies for only those apprentices hired in excess of the eligibility threshold. The marginal feature would minimize the problem of windfall payments for existing training efforts, but it also would have the unhappy effect of seeming to penalize employers who had invested in training in the past while rewarding those who had refused to train. Worse still, because most apprenticeship training in the United States takes place in the union sector, a marginal subsidy would be of much greater benefit to nonunion firms than to unionized firms and would therefore be viewed as an anti-union measure promoting unfair competition and undermining union wage standards.

## What Would a Subsidy Program Look Like?

The multitude of different possible subsidies can be broken down into two rough categories--subsidies of the wages of first-year apprentices and subsidies of other training costs incurred by employers.

## Wage Subsidies

The wage costs of beginning apprentices could be subsidized in several ways: (1) as a percentage of the wage rate paid to new apprentices; (2) as a percentage of beginning apprentices' total earnings; (3) as a percentage of the difference between the wage rates of new apprentices and journeymen; (4) on the basis of a fixed amount per hour worked by new apprentices; or (5) as a per capita "bounty", a specified sum per new apprentice indentured. Space does not permit a full consideration of each kind of wage subsidy in light of all the evaluative criteria set forth above, but a few points should be noted.

First, a subsidy based either on earnings or hours worked would be preferable to the others from the standpoint of administrative simplicity. Employers already report both earnings and hours worked, whereas reporting wage rates, especially where there is not a negotiated scale, would entail additional paperwork for employers.

Second, a subsidy based on a percentage of wage rates or earnings would result in higher subsidy payments to firms paying higher wages and would thus appear to be biased in favor of such firms. An hours subsidy or lump-sum bounty, on the other hand, would provide a relatively greater subsidy for firms paying lower wages and would appear to be biased in their favor.

Third, there would have to be a clear definition of what constitutes a "new apprentice" for subsidy purposes. In the case of a lump-sum bounty, the apprentice would have to work some minimum number of hours for the employer to qualify for subsidy payments. The qualification issue would be complicated further in industries where apprentices work for several employers over a year's time; in such industries, identifying eligible employers could be a major administrative burden.

Finally, no matter which kind of wage subsidy were adopted, it probably would prove to be an ongoing program, chiefly because wage costs also are ongoing. As long as beginning apprentices' wages exceed their productivity, many employers will continue to resist hiring those apprentices unless subsidy payments reduce the wage costs to employers. In other words, it might not be possible to implement a wage subsidy that could be phased out in a few years' time, at least if employers were expected to maintain their training efforts after the subsidy ended.

## Subsidies of Training Costs Other Than Wages

There are numerous costs of apprenticeship training other than wages that also could be the focus for an employer subsidy program. Prominent among these are direct training costs such as materials breakage and spoilage; machine downtime; time spent by journeymen and supervisors in instructing apprentices on the job; costs of initial training for new apprentices prior to their assumption of tasks; costs of building, equipping, and operating industry training facilities; employer contributions to industry training funds; and, possibly, costs of providing continuing training for unemployed apprentices to reduce attrition rates during periods of high unemployment. Again, this is not an adequate forum for a detailed consideration of each of these subsidies, but a few comments should be made.

First, in contrast with wage subsidies, at least two of these schemes--funding to establish industry training facilities and industry training funds--could be temporary rather than on-going subsidy programs. Funding for initial training or direct training costs would probably be permanent, as would a subsidy to train unemployed apprentices, though the latter would be somewhat more intermittent.

Second, a subsidy for direct training costs would be exceedingly difficult to administer because of the problem of identifying and measuring the costs of training apprentices (let alone additional apprentices). Such a program could be an administrative nightmare for both employers and the government.

Third, subsidies for industry training facilities might lead to demands by nonparticipating employers and apprentices that those facilities be open to the public at large because they were built in part with public funds. If this problem could not be resolved, few employers would be willing to contribute to the financing of such centers, since their apprentices could use the centers for free.

Fourth, subsidized training for unemployed apprentices probably would provide little incentive for employers to adopt apprenticeship, although such a program might greatly reduce attrition rates in some industries during recessions. On the whole, this kind of subsidy is least likely to lead to a significant expansion of the apprenticeship system.

Finally, neither training cost subsidies nor wage subsidies should have an adverse effect on the American apprenticeship system. Apprenticeship would continue to be a voluntary, private system; no employer would be required to train apprentices or, indeed, to accept subsidy payments if he did engage in training. Nor should any subsidy adversely affect the quality of apprenticeship training. If anything, a subsidy program should raise the overall quality of training, both by enabling employers to provide some kinds of training that they presently cannot afford and by giving the Bureau of Apprenticeship and Training (BAT) and the State Apprenticeship Councils (SACs) something valuable to be withheld from employers whose training efforts do not meet prescribed standards.

## Experience from Foreign Apprenticeship Subsidy Programs

I have already noted that most industrialized countries subsidize their apprenticeship systems to a greater extent than the United States. Most governments, for example, pay the cost of apprentices' related instruction; Australia even provides one year of preapprenticeship training in the public schools, with stipends paid to enrollees. The United Kingdom, France, and West Germany all have central training funds financed by taxes on industry; the German program taxes employers in inverse proportion to the rate at which they expand the number of apprentices in training, thus rewarding employers who train and punishing those who do not. The German scheme also provides financing for industry training facilities.

In addition, there have been numerous wage subsidy programs inaugurated for employers of apprentices. French employers are forgiven half of the considerable social security taxes paid on the wages of apprentices for up to one year. In the Netherlands, employers of previously unemployed apprentices can qualify for subsidies of 50 percent or more on the earnings of beginning apprentices. British firms can qualify for lump sum grants by increasing their hiring of apprentices or by taking on apprentices who have been laid off by other employers. Earnings subsidies are paid to employers of apprentices in Finland, while Australian employers are reimbursed for wages paid to apprentices attending related instruction off-the-job.[1] Canadian firms are eligible for wage subsidies for beginning apprentices that range as high as 85 percent on the earnings of disadvantaged apprentices.[2]

Even though other countries have had a wealth of experience with apprenticeship subsidies, almost nothing is known about the effects these subsidies have had on the spread of apprenticeship. I have been unable to obtain the results of a single study documenting results of any of the programs mentioned above. Only for the United Kingdom has any estimate been made. Reubens has concluded that for an average subsidy of about 1,300 pounds per apprentice, the number of apprentices in Britain was increased by about 25 percent between 1975 and 1977.[3]

## Theoretical and Empirical Research on Wage and Training Subsidies

A great deal of theoretical research has been devoted to the subject of hypothetical wage subsidies as means of stimulating employment (but not employment and training), and the results nearly always show wage subsidies to be highly cost-effective alternatives to such employment-expanding tools as general tax cuts, increases in government spending, and public job creation.[4] Studies of actual wage subsidy programs in the United States, however, have produced much less favorable outcomes. Two studies of the New Jobs Tax Credit of 1977 indicated that the wage subsidies paid to employers under that program had had a significant impact on hiring,[5] while a third study found that almost all of the subsidy consisted of windfall payments to employers, with little left over to stimulate employment.[6] Wage subsidies available to employers of welfare recipients under the Work Incentive Program (WIN) and the Aid for Families with Dependent Children (AFDC) tax credits apparently have had a negligible impact on the employment of the disadvantaged.[7]

The results of training cost subsidies in the United States are less ambiguous, but also less helpful. Virtually all of the subsidies paid to employers have been for hiring and training of the disadvantaged under the Manpower Development and Training Act (MDTA), the National Alliance of Businessmen-Job Opportunities in the Business Sector (NBA-JOBS), and the Comprehensive Employment and Training Act (CETA). The effect of those subsidies on the hiring of the disadvantaged has been, in my view, unimpressive. Even during the economic boom periods of the late 1960s and 1970s, hiring of the disadvantaged under MDTA and CETA comprised only a tiny portion of all new hires, even though one would have expected the tight labor markets during these periods to have led to the hiring of disadvantaged workers even without subsidies. Further, there is evidence that many workers hired under NAB-JOBS received little training, and that, in fact, they tended to cluster in low-paying, dead-end jobs that have always been open to the disadvantaged.[8] Overall, the experiences with subsidies for the employment and training of the disadvantaged in this country do not lead one to be sanguine about the prospects for similar programs in the future. One inference, I think, is clear: whatever form a subsidy for apprenticeship takes, it should not be aimed at the disadvantaged if it is expected to be embraced by enough employers to have a significant impact on the spread of apprenticeship.

## A Modest Proposal

Clearly, not enough is known at present to say with certainty--or even with conviction--which form of subsidy would be most cost-effective in spreading apprenticeship. For instance, we know little about the wage elasticities (i.e., the responsiveness) of supply and demand for apprentices, yet reliable estimates of their magnitude are necessary to calculate the likely cost of a wage subsidy program. Nor do we have accurate information concerning the relative importance of various non-wage training costs by industry, yet such information could be valuable in identifying the kinds of training cost subsidies that would be most effective in various industries. And, as I have mentioned earlier, it would be instructive to know how effective subsidy programs have been in expanding apprenticeship abroad, but almost nothing appears to have been done toward assessing the impact of those programs. Any movement to establish an employer subsidy program in this country should be held in abeyance until researchers have provided policymakers with data on costs, elasticities, and the results of foreign subsidies, so that programs in the United States will be founded on something more than educated or intuitive guesses.

Having made the above disclaimer, I cannot resist the temptation to speculate on the most likely of the subsidies I have proposed. My guess is that the best approach would be for government to provide "seed money" to establish industry training funds, such as those that now exist in most of the building trades. There are several reasons why this particular kind of subsidy appears most promising.

First, subsidies of training funds would build on successful experiments. Joint industry training funds have enabled the building trades to pool the resources of signatory contractors in order to engage in training activities that would be beyond the capabilities of single firms, particularly where the establishment of specially equipped industry training centers is necessary to provide high-quality training. These models may be appropriate to the other industries as well, especially those in which the economies of training on a large scale would result in better-trained craftsmen at a lower cost.

Second, these are subsidies that could easily be phased out after a few years. Ideally, the government's contribution would be heaviest in the first year or two and would decline as more and more employers joined the program. When the industry fund grew large enough to become self-sustaining, subsidy payments would cease altogether. The temporary nature of the subsidy would limit the financial burden on the taxpayers and would seem more equitable than subsidizing some employers at a higher rate than others for an unlimited time.

Third, the establishment of industry funds, to be spent in whatever manner was best suited to the needs of particular industries, would be preferable to the government trying to guess which kind of categorical subsidy would work best. An industry that needed sophisticated, specialized training facilities could use the funds to construct those facilities, while another industry that might benefit most from initial training for its apprentices could finance a preapprenticeship program with industry funds.

Fourth, and perhaps most important, subsidies of industry-wide training efforts would make investments in apprenticeship less risky because competitors would also be engaged in training and thus would not be stealing trained workers away from each other.

To illustrate the last point, consider the automotive repair industry. Like the construction industry, auto repair is comprised of a multitude of small and medium-sized firms whose employees' skills are not specific to the firms that employ them. Because those skills are portable among firms, it makes little sense for any individual employer to invest heavily in training; to do so might simply mean training his competitors' work force. As a result, little formal training takes place in auto repair shops, even though the industry is one whose skill requirements are otherwise ideally suited for apprenticeship. In that respect, it resembles nonunion construction in that it lacks only a catalyst such as a collectively bargained training agreement to bring employers together in a joint training venture. Government subsidy payments could provide such a catalyst, both by reducing (at least initially) each firm's training costs and by reducing the risk of training encountered by individual employers.

## Tax Credits versus Direct Cash Grants

No matter which, if any, subsidy program is adopted, an important problem that is sure to arise is whether to make subsidy payments in cash or in the form of tax credits. For several reasons, I would strongly prefer a cash grant approach.

First, a cash grant for apprenticeship would be about as easy to administer as a tax credit. This is not the case for most subsidy programs, because usually a system of direct cash grants requires additional appropriations of funds, and often it entails the creation of yet another bureaucracy to administer the program; by contrast, a tax credit can be implemented through a simple change in the tax laws and administered by an existing agency, the Internal Revenue Service. Tax credits would not have an advantage over direct cash grants in the case of subsidies for apprenticeship, however, because there would be no need for a new bureaucracy to administer cash grants. BAT or State Apprenticeship Councils already oversee the registration of apprenticeship programs, and their staffs monitor the training that is offered in each registered program. With little if any increase in staff, BAT and State Councils could easily identify eligible employers and make direct cash grants. Furthermore, IRS personnel have no experience monitoring employment and training programs, whereas BAT and SAC staff are experts in employment and training matters and have years of experience with apprenticeship training. It is reasonable to assume, then, that a direct cash grant program would be better administered than a tax credit program because of the superior expertise of BAT and the SACs.

Second, I am a lot more optimistic about the quality of legislation that is likely to emerge in the case of a cash grant program. A tax credit, like all tax legislation, would come under the jurisdictions of the House Ways and Means Committee and the Senate Finance Committee. Neither the members of these committees nor their staffs have much experience in writing legislation pertaining to employment and training matters. On the other hand, a direct cash grant administered by BAT would fall under the jurisdiction of the Senate Labor and Human Resources Committee and the House Education and Labor Committee, both of which have extensive experience with legislation governing employment and training programs. It is reasonable to suppose that better legislation would be produced in the latter case because of the greater expertise of the legislators and their staffs in the area of employment training.

Finally, and perhaps most important, a tax credit would be less effective than a direct cash grant in spreading apprenticeship because all employers could be reached by a cash outlay program, but not by a tax credit. A tax credit would be meaningless to private employers whose profits were so low that they paid little or no federal income tax. Unless the credit were refundable (payable even to firms with tax liabilities smaller than the amount of the credit), a tax credit would offer no incentive to those employers to engage in apprenticeship training. And because governments and nonprofit organizations are exempt from federal income tax, a tax credit would be no inducement for them to train apprentices either. Where governments are concerned, the absence of impact of a tax credit would be especially unfortunate, since there may be more potential apprentices in government than in any other sector of the economy. Implementing a subsidy via tax credits would mean excluding from the program the sector of the economy in which the possibilities for expansion of apprenticeship may be greatest.

## Subsidy Legislation

The establishment of any subsidy program for apprenticeship training would require new legislation. Given the Department of Labor's present emphasis on encouraging employment and training efforts in the private sector, it might seem logical to implement a subsidy program for apprenticeship under the Private Sector Initiative sections of CETA, or though amendments to CETA. I would oppose that approach for two reasons. First, it would be impossible to implement a full-scale wage subsidy program for apprentices under CETA because CETA expressly forbids the payment of wage subsidies except in experimental programs. Thus, even if a wage subsidy appeared to be potentially the most effective program, it could not be established on a permanent basis under CETA.

Second, the bulk of CETA funds are required to be spent on specific target groups, most notably the disadvantaged. While serving the disadvantaged is a worthwhile goal, experiences with subsidies aimed at persuading employers to hire and train the disadvantaged have not been especially encouraging. Targeting a subsidy on the disadvantaged might enable some disadvantaged workers to displace other apprentices, but it probably would not induce many employers to adopt apprenticeship training. A far better strategy would be to implement the kind of program that would induce the largest number of employers to train apprentices. The approach should be to achieve the maximum expansion of the apprenticeship system and then to depend on affirmative action and outreach efforts to secure a reasonable number of places for the disadvantaged within the expanded system.

For both of these reasons, CETA is not a promising vehicle for subsidy legislation. Rather, it would be better to amend the National Apprenticeship (Fitzgerald) Act of 1937 to enable BAT and the SACs to implement the program and supervise payment of the subsidy.

## Conclusion

To sum up, I think it is too early to tell whether any scheme of financial incentives to employers should be adopted to further the spread of apprenticeship. This paper represents an attempt to set forth some reasonable criteria for evaluating the prospects for any subsidy that might be proposed and to identify several of the more troublesome problems that might hinder implementation of a subsidy program. I hope it will serve as a springboard for serious discussions among members of the apprenticeship community concerning the advisability of subsidizing apprenticeship in the United States.

## Notes

1. Beatrice G. Reubens, Policies for Apprenticeship (Paris: Organisation for Economic Co-operation and Development, 1979), pp. 50-68; and personal conversations with Reubens based on her research with the U.S. Department of Labor Task Force on European Apprenticeship.

2. Telephone interview with H. John Meyer, director, Institutional Training Division, Canada Employment and Immigration Commission (November 29, 1978).

3. Reubens, Policies for Apprenticeship, p. 67.

4. Kenneth R. Biederman, "Alternative Tax Subsidies for the Training and Employment of the Unemployed," in U.S. Congress, Joint Economic Committee, Economics of Federal Subsidy Programs (Washington, D.C.: U.S. Government Printing Office, 1972), pp. 541-569; John H. Bishop, The General Equilibrium Impact of Alternative Antipoverty Strategies: Income Maintenance, Training and Job Creation (Madison: University of Wisconsin, Institute for Research on Poverty, February 1977); Gary C. Fethke and Samuel H. Williamson, Employment Tax Credits as a Fiscal Policy Tool, study prepared for the Subcommittee on Economic Growth of the Joint Economic Committee of the U.S. Congress (Washington, D.C: U.S. Government Printing Office, July 1976); Daniel S. Hamermesh, "Subsidies for Jobs in the Private Sector," in John Palmer (ed.), Creating Jobs (Washington, D.C.: The Brookings Institution, 1979), pp. 87-122; Nicholas Kaldor, "Wage Subsidies as a Remedy for Unemployment," Journal of Political Economy (December 1936), pp. 721-742: Jonathan R. Kesselman, Samuel A. Williamson, and Ernst R. Berndt, "Tax Credits for Employment Rather Than Investment," American Economic Review (June 1977), pp. 339-349; P. R. G. Layard and S. J. Nickell, "The Case for Subsidising Extra Jobs," Economic Journal (forthcoming).

5. John Bishop and Robert Haveman, "Selective Employment Subsidies: Can Okun's Law Be Repealed?" Paper presented at American Economic Association meeting, August 1978 (forthcoming in Proceedings of the AEA Meetings, 1979); John Bishop and Robert Lerman, "Wage Subsidies for Income Maintenance and Job Creation," in Robert Taggart (ed.), Job Creation: What Works? (Salt Lake City, Utah: Olympus Publishing Company, 1977), pp. 39-70.

6. Jeffrey M. Perloff and Michael L. Wachter, "The New Jobs Tax Credit: An Evaluation of the 1977-78 Wage Subsidy Program," American Economic Review (May 1979), pp. 173-179.

7. Peter P. Amons, "Work Incentive Program," in Charles R. Perry et al. (eds.), The Impact of Government Manpower Programs, Manpower and Human Resources Studies No. 4 (Philadelphia: University of Pennsylvania, The Wharton School, Industrial Research Unit, 1975), pp. 360-396; Peter M. Greenston and C. Duncan MacRae, Categorical Wage-Bill Subsidies: Theory and Application (Washington, D.C.: The Urban Institute, 1975); David Thompson, Jan Parkinson, and Dorothy Bonnallie, An Assessment of WIN and Welfare Tax Credits, Final report to U.S. Department of Labor, Employment and Training Administration (Minneapolis: Institute for Manpower Program Analysis, Consultation, and Training, Inc., March 1977).

8. Greenleigh Associates, Inc., The Job Opportunities in the Business Sector Program: An Evaluation of Impact in Ten Standard Metropolitan Statistical Areas (New York); Henry M. Levin, "A Decade of Policy Development in Improving Educational and Training for Low-Income Populations," in Robert H. Haveman (ed.), A Decade of Federal Antipoverty Programs: Achievements, Failures, and Lessons (New York: Academic Press, 1977), pp. 123-188; U.S. General Accounting Office, Evaluation of Results and Administration of the Job Opportunities in the Business Sector (JOBS) Program in Five Cities (Washington, D.C.: U.S. Government Printing Office, 1971).

# RESPONSE

Earl M. Chambers II
International Association of Machinists

For centuries the most effective method of transferring skills from one generation to another has been apprenticeship. During the last twenty years, there has been a reluctance on the part of many employers to incur the expense of training new apprentices, and, consequently, apprenticeship has not kept pace with growth of industry. Although the Bureau of Apprenticeship and Training of the U.S. Department of Labor has reported a steady growth in apprenticeship, our industry records indicate a decrease of 76,588 skilled journeymen machinists since 1970, and only 22,733 apprentices are currently training.

The *Wall Street Journal* recently reported figures from the U.S. Department of labor on two skilled specialities that give an idea of the size of the problem. These data indicated the United States will need to add 9,000 tool and die makers and 23,000 machinists each year between now and 1990. Field visits and reports from apprenticeship committees, Grand Lodge representatives and district and local lodge officers generally indicate apprenticeship opportunities are still declining. Registered programs covered by collective bargaining agreements are, in many cases, not being implemented; when they are the number of apprentices employed is often minimal. In a survey of local lodges of the International Association of Machinists (IAM) the average age of an apprentice was 30 years. In the next ten years, 40 percent of our tool and die makers will reach retirement age. We must expand apprenticeship now or lose these skills, which are so vital to the security of our nation.

In the machine and manufacturing industry around the country, we have heard remarks on the use of apprenticeship as a vehicle for equal employment opportunity. Emphasis has been placed upon number of minority trainees and ethnic breakdown rather than the skills of the trainee. High quality skill training programs are to the advantage of both employers and trainees, particularly when trainees are women or belong to minorities or disadvantaged groups. Good programs lessen the frustration for employers and trainees. Frustration has led some employers to refuse to register apprenticeship programs with the government. In several localities, for example, we have a large concentration of members and apprentices who are being trained, but employers do not want to be involved with government red tape. Hence, they wil not register their apprentices. Even some of our local lodge

Joint Apprenticeship Committees have become Joint Advisory Committees to eliminate the legal responsibilities in the selection procedures. It would not be uncommon for an employer to avoid government red tape by not having an apprenticeship program at all. Not only are employers refusing to hire apprentices, but, since the revision of the labor standards for registration of apprenticeship programs 29 CFR 29, we have seen our established apprenticeship programs diluted by interpretations by the Bureau of Apprenticeship and Training (BAT). Interpretations of 29 CFR 29.4 have posed particular problems.

The BAT currently lists 432 apprenticeable occupations. The traditional craft of general machinist has been fractionalized 26 times by short-term specialist training. For example, machine tool builder, precision lathe operator, and precision mill operator are registered as being apprenticeable. In fact, they are all a part of one traditional craft. The same problems have been created in the automotive trade with the creation of air conditioning system technician, automotive tune up mechanic, and front end mechanic. These classifications are all part of the skilled trade of auto mechanic.

Apprenticeship programs funded under the Comprehensive Employment and Training Act (CETA) have had a tendency to follow this pattern of excessively narrow training. This trend has led to a critical shortage of quality journeymen in many of the crafts; equally important, it does not provide the apprentice with the well-rounded journeyman training that is essential to a lifetime career.

To stimulate quality apprenticeship training, the IAM developed a pilot program in 1977, for which we received a grant from the U.S. Department of Labor under Title III of CETA. It established an apprenticeship outreach program in the automotive industry. The goal of this program was to place 3,000 people into indentured apprenticeships registered with the BAT. In actuality, the IAM achieved 133 percent of its goal and indentured over 4,000 individuals into the apprenticeship system, primarily in the automotive field. Under a revised budget in an additional contract with the U.S. Department of Labor, the IAM expanded its program to include machinists of all of the metal trades. We will achieve 100 percent of our contract goal of 450 new apprentices.

Recognizing the need to expand apprenticeship in the skilled crafts, the IAM Executive Council in April of 1979 established a Department for Apprenticeship, Employment, and Training Programs at Grand Lodge headquarters. Additionally, International President William W. Winpisinger re-established the National Standing Committee on Apprenticeship, under the co-chairmanship of General Vice President Poulin and General Vice President Ducy. Two representatives from each territory were selected by the territorial general vice president to serve on the committee. Meeting at Grand Lodge headquarters in November 1979, the committee was appraised of the status of the IAM apprenticeship system and reviewed its current policies.

The apprenticeship department, under its new director, immediately undertook steps to evaluate and strengthen the IAM apprenticeship system. One of the first actions taken was to obtain a grant from the U.S. Department of Labor to provide research funds for staff to assess the state of apprenticeship within the IAM. Working in cooperation with the IAM research director, a survey procedure was developed and sent to all local lodges requesting pertinent apprenticeship and training program information. Approximately 80 percent of the locals responded and data are currently being evaluated. A slight majority of locals report that their contracts do not mention apprenticeship at all.

Reinforced with the experience gained in these programs, we know federal funding can expand apprenticeship and we are in agreement with Dr. Franklin that the application of financial incentives during the first two years of a traditional four-year program would definitely expand apprenticeship on an industry-wide basis. Effectively reducing the cost of training during this period of low productivity would ensure greater participation by all employers. This would necessitate safeguards for third and fourth year apprentices and a commitment to continue to train for the full term of apprenticeship.

Of the methods suggested, reimbursement to an employer of a percentage of an apprentice's wages is the least complicated. It would also be equitable in all parts of the country. The starting wages of an apprentice in a labor-negotiated contract ranges between 50 and 65 percent of a journeyman's rate, which is conducive to the entrance of new trainees.

The subsidy should be focused on means and methods to provide skill training for qualified men, women, and members of minorities and other social groups for employers. The best approach would be that which made the subsidy program most attractive to employers while at the same time providing equal opportunity. This would produce the largest expansion of apprenticeship programs. Outreach efforts should, at the same time, be addressed to underrepresented groups to ensure their fair share of places within the expanded system.

To ensure that subsidies are paid only for high quality apprenticeship training, employers must be required to register their apprenticeship programs in order to be eligible for subsidy payments. Administration of a subsidy program should be through an agency with expertise in apprenticeship. We concur that the Bureau of Apprenticeship and Training and the State Apprenticeship Councils would provide the most effective method of coordination and accountability.

As Dr. Franklin suggests, any incentive program that would lead to excessively narrow training or the use of apprentices as subsidized cheap labor would subvert the entire purpose of public funding. We would therefore recommend that the establishment of a financial incentive program be limited to those occupations that are designated as in critically short supply by the U.S. Department of Labor.

We strongly oppose Dr. Franklin's recommendation that only new programs receive a subsidy. Since apprenticeship has historically been voluntary, we should not penalize employers who have shouldered the financial burden and who are currently training apprentices in critical labor areas. Their dedication is the cornerstone of apprenticeship. Employers who have trained in the past can provide the experience needed to make this progarm a success.

Any program must be cost-effective to be successful. The establishment of Apprenticeship Trust Funds is a prime example of cost-effectiveness. The cost of administration would be shared by all participating employers through contributions to the fund of a set amount for each hour worked by journeymen. Established with federal seed money, the fund, in time, would be self-sustaining. The governing body of the trust fund would be the Board of Trustees. An equal number of trustees would be elected from labor and management--a chairperson from one group and a secretary from the other.

Additionally, an Apprenticeship Trust Fund would provide the funding agency with a central source of information. Everyday administration would be conducted by an apprentice coordinator who would be additionally responsible for developing curriculum and related instruction programs, registering new apprentices, monitoring the progress of all apprentices, developing apprenticeship standards, and providing a central contact point for apprenticeship employment opportunities.

We disagree with Dr. Franklin's recommendation that legislation be enacted to amend the National Apprenticeship Act. The act provides the regulations for operation of apprenticeship programs--not funding sources. Dr. Franklin also recommends that financial incentives be of a temporary nature; it would not be sensible to open the National Apprenticeship Act for temporary measures.

The vehicle for major manpower programs in this country has been the Comprehensive Employment and Training Act. Although it is targeted at the disadvantaged, it could be utilized to assist apprenticeship training under Title III or by the addition of a new Title VIII.

For example, Title III of CETA allows the secretary of labor to use funds to service nondisadvantaged individuals under certain circumstances. One of these circumstances would be to mount a training program or to expand apprentices' activities, which would resolve critical skill shortage occupations. Another option would be the addition of a new Title VIII to provide apprenticeship training in critical skill occupations to nondisadvantaged individuals.

In closing, an experimental program of financial incentives to expand apprenticeship could effectively stimulate training in critical occupations in the machine and metal trade industry and provide a reduction in the shortage of qualified skilled workers, who are so vital to the security of our country.

# RESPONSE

Samuel W. Gintz
General Electric Company

Dr. Franklin's paper contains a statement that many employers view any form of training as an expensive method of meeting their requirements for labor. This is no doubt true, but I wonder if these employers really know what the training costs are. Are they just being frightened by the term expensive and thereby avoiding the issue? Let me illustrate with an incident that occurred about 20 years ago. I wanted to buy a steel ball of a certain diameter so I called a local bearing company and told the clerk what I wanted. The clerk said that the size I wanted was not standard and would cost a fortune. I told him to forget it. Later I began to wonder how much a fortune was, so I called him back and was amazed to find out that it was $1.50. Then I realized that a small standard steel ball normally cost about 10 cents. The clerk, not knowing how I was going to use it, thought I would never pay $1.50 for one.

A General Electric plant in Erie, Pennsylvania, requires many machinists, machine operators, draftsmen, electricians, and other skilled workers. Due to the shortage of skilled people, the company, for the most part, must train its own employees. However, a skill center has been built in Erie as a result of the efforts of the Manufacturing Association of Erie, the Pennsylvania Department of Education, and twelve county school districts. The funds involved are federal, state, and local. The local funds were contributed by area business and industry. This is not the first skill center built in the country, however, it is the first where industry was involved from day one. Industry craft committees designed the labs, selected the equipment, and worked with the architect on the design of the building.

The skill center has 18,000 square feet of training shop where machinist apprentices are trained on the first shift and machine operators are trained on the second and third shifts. The apprentices that are being trained on first shift in the training shop are first-year apprentices. Dr. Franklin mentions that some companies are reluctant to take on first-year apprentices because they feel they will be unproductive. This does not necessarily have to be. The apprentices in the above-mentioned training shop are trained on actual work. The beginning apprentice is placed in the saw section of the training shop, where within a few minutes he or she is taught to saw pieces of material used by other apprentices to make parts. After approximately two weeks in the saw section, the new apprentice is moved to the drill press section and then to other situations. Several advantages of training apprentices on actual work are: the jobs are completed regardless of the efficiency factor; many industries have old supply jobs requiring no tooling that apprentices can do instead of toolmakers, who earn a higher rate of pay; apprentices can do work in a training shop that would have to be sent to an outside tool shop at higher costs; a training shop can often be used to produce emergency work; apprentices can fill supply orders for small quantities, freeing production workers in the plant for long-run jobs (short-run jobs are best for training); apprentices as a group constitute a work force with very little turnover at a relatively attractive wage rate.

Training first-year apprentices by having them produce actual work may not eliminate the cost of training, but it certainly will reduce these costs. Therefore, it would behoove any industry that needs skilled mechanics to examine these first-year costs. They might be surprised at how low they actually are.

Dr. Franklin mentions various ways, means, and criteria for subsidizing employers to encourage them to adopt apprenticeship training or increase the number of apprentices they are training. I approve of subsidizing to encourge and promote more apprenticeship training, but suggest it be done by the establishment of specially equipped industry training centers like the one I have described in Erie, Pennsylvania. I think that I speak for most companies when I say that industry wants less, not more, government involvement. Most companies would be reluctant to accept a government subsidy for training apprentices. However, we have in Erie a 3 million dollar industrial training center for adults. Funds could be made available to subsidize first-year apprentices at this training center before they enter any company. This could be the answer for many companies that feel they can not afford first-year apprentice training expenses. The subsidy would be given to the skill center, not to companies, which eliminates the problem of deciding which companies would be subsidized and how much money each company would get. Much of the red tape that would go with such a venture would also be eliminated. The companies could work with the skill center and not be obligated to any federal or state agency. I believe industry in general would approve of this type of subsidy and would be interested in working closely with skill center personnel to see that good and meaningful training was provided.

Other forms of subsidy, such as the hiring and training of the disadvantaged under Manpower Development and Training Act (MDTA), National Alliance of Business - Job Opportunities in the Business Sector (NAB-JOBS) and the Comprehensive Employment and Training Act (CETA), can be good if the programs are run correctly. But these funds should be used for short-term training; not apprenticeship training. For example, we have trained 2,372 machine operators from October 1964 through December 1979. Of these trainees, 682 have been funded by the various programs mentioned. CETA, for example, pays approximately one-half the trainees' wages. Consider that our job placement rate is over 90 percent and that after being placed on a job in our plant the trainee pays the government back the money it funded in the form of taxes in approximately one year. In my opinion, this is the way to help people; you might say we teach them how to fish.

One final comment. Dr. Franklin says that employers should be encouraged to register nonregistered programs. I believe this is highly debatable. A company should understand that state or federal apprenticeship registration agencies prefer to work with joint apprenticeship committees. Generally speaking, most unions in industry are not interested in spending any money on training but would be delighted to tell you how to spend yours.

# CHAPTER IV

# RESEARCH FINDINGS ON PROGRAMS TO ACHIEVE INCREASED PARTICIPATION OF WOMEN IN APPRENTICESHIP: SOME PRELIMINARY RESULTS

# WOMEN AND APPRENTICESHIP: A STUDY OF PROGRAMS DESIGNED TO FACILITATE WOMEN'S PARTICIPATION IN THE SKILLED TRADES[1]

Roslyn D. Kane
Rj Associates, Inc.

Jill Miller
Institute for Women's Concerns

In 1977 a study was conducted by staff of the Institute for Women's Concerns to determine why so few women applicants were being admitted to apprenticeship and to identify the differences between the successful and unsuccessful applicant.[2] Women apprentices and applicants were surveyed to determine differences in background, preparation, and experiences prior to seeking admission to apprenticeship. Apprenticeship coordinators, members of joint apprenticeship committees (JACs), and employers were interviewed, as well as staff of programs designed to recruit and prepare women for admission to apprenticeship.

The study revealed that women experienced great difficulties gaining access to apprenticeship and that these difficulties were far more complex than sexual bias on the part of the union officials and/or employers. Most women were not prepared educationally, physically, psychologically, or experientially for apprenticeship. The application and admission process operated to increase disadvantages for women in gaining admission to apprenticeship. The study found that women had difficulty convincing JACs that they were genuinely interested in a career in the trades. Women found it difficult to appear sufficiently determined or assertive or to describe adequately their experiences and skills during the oral interview. Unions and employers voiced skepticism concerning women's ability to handle the physical requirements of the job. Age requirements imposed by some of the trades were a barrier for women, since the women who sought apprenticeship were generally older than male applicants and often beyond the stated maximum age for admission.

Some of the women surveyed had sought assistance from programs designed to prepare interested individuals for entry into apprenticeship. The federal government began sponsoring these programs in the early 1970s to provide information, tutoring, and placement services that would assist women to enter apprenticeship. The study found that the proportion of the successful women apprentices who had participated in some type of recruitment or outreach program was much greater than that of the unsuccessful applicants. Fifty-one percent of the women apprentices, compared to 14 percent of the unsuccessful women applicants in the survey, had participated in a program prior to their application for apprenticeship. Of those who participated, more than 80 percent of women who had participated in recruitment programs completed the program successfully to the point of being named to an eligible apprenticeship list.

In light of the findings of the 1977 study, the present Institute for Women's Concerns study, sponsored by the Division of Apprenticeship Research and Development of the U.S. Department of Labor, is evaluating ten programs that are preparing women for entry into apprenticeship.

## Criteria for Selection of Programs

Criteria used to select the ten programs studied by the Institute for Women's Concerns included the number of women the program had served and the number of women who had been successful in gaining admission to apprenticeship. Programs in cities with diverse economic bases were evaluated. A variety of organizations were represented: programs operated by women for women; programs operated by agencies for women; and programs originally designed to serve minority men to which a women's component had been added. Programs were selected to ensure a demographic cross-section of participants and a range of apprenticeships, including but not limited to those in construction.

The ten programs chosen vary in the services they provide to participants. Most provide orientation, tutoring, and counseling. Some programs are designed to provide information and referral to interested women. Other programs have tool-identification and familiarization components. Some programs provide or refer women to a physical development component. Some programs provide opportunities for skills acquisition. In some cases the skills acquisition component is designed for a specific trade; other programs include skills development relevant to a range of trades. The ten programs being assessed represent the three categories of preparation for apprenticeship programs identified through a study conducted by Robert Glover.[3]

1. Apprenticeship Outreach. Apprenticeship outreach programs provide employment development, which may lead to jobs or apprenticeships. Apprenticeship outreach was developed to recruit and prepare individuals for apprenticeship, and this remains its primary function. Apprenticeship outreach programs are not craft-specific, but provide a range of services and follow-up.

2. Outreach-Skills Development. Outreach-skills development programs provide the employment development services of apprenticeship outreach, as well as tool familiarization and tool training specific to a certain trade.

3. Craft-Readiness Training. These programs are designed to provide either on-the-job training leading to apprenticeship or combined classroom and hands-on training designed to give participants comprehensive, entry-level skills in a specific trade. They may lead

directly to apprenticeship. Recruitment and support services are not a primary concern to these programs.

The purpose of the Institute for Women's Concerns study is to assess the results achieved by these programs and to identify the specific components and services that are most useful in assisting women to gain entry into apprenticeship programs. Current program operations are being evaluated over the course of a year on the basis of the characteristics of the women who are being served, the types of services they are receiving, the number of women placed in apprenticeship, and the types of apprenticeship in which they are placed.

Services and activities of each program were defined through extensive interviews with the staff, by observation, and through group interviews with women who participated in the program. Where there were other programs in the same city recruiting and preparing women for apprenticeship, interviews with their program staff were conducted. Additionally, employers, unions, and joint apprenticeship committees with which the programs have contact were interviewed to obtain their assessment of the programs' services and activities.

## Essential Services for Placement Programs

The present study will consist of data collection and data analysis. On the basis of the findings, a model program will be designed and submitted to the U.S. Department of Labor in October 1980. As of April 30, 1980, data had been collected for the first six months of the study year. The present paper is based on analysis of the information gathered during the first series of interviews and observations at the program sites. These observations indicate that there is considerable agreement with regard to the need for certain services and program components to assist women to enter apprenticeship. These essential services include orientation, counseling, tutoring, preparation for oral interviews, and physical fitness. This is not to say that there is agreement on the approach, technique, or strategy utilized in delivering these services. In fact there are significant differences among the programs in the methods and time involved in delivering similar program services.

Three additional components discussed below are considered by most program operators to be essential. There exists, however, a wide range of opinion among those interviewed as to the design of the components.

### Recruitment

Although all of the programs regard recruitment of women to be within the scope of their responsibility, the extent to which any program actually engages in this effort depends upon a number of factors such as the number of women who seek the program's services, whether the program is serving only women eligible under the Comprehensive Employment and Training Act (CETA), how long the program has been in operation, and the capacity of the staff to serve the number of women seeking services.

Programs that are limited to serving participants who meet CETA eligibility requirements often engage in major publicity and outreach activities in an effort to attract enough eligible women. Even with extensive effort, these programs often have difficulty filling all of their slots.

This is not the case for programs unconstrained by income eligibility requirements. Nor is it true for programs that have been operating for several years and have a proven track record or for programs that have a national or local reputation. Many of these programs avoid recruiting at all (except for minority and low income women) because their staff capacity is already overloaded. Since the issuance of the federal regulations establishing goals for women (29 CFR 30 and 41 CFR 60.4), these programs have more women seeking services than they are able to serve. Any direct or indirect publicity about the program inundates the staff with requests for information about the program. One program reported 250 women applicants in one day after a two-paragraph announcement in the newspaper concerning renewed funding of the project.

## Hands-On Training

Provision for hands-on training represents the major distinguishing characteristic among the programs. Six programs provide no opportunity for hands-on training but refer interested women to vocational education classes or to semi-skilled jobs where such experience can be obtained. One program offers trade vocabulary and tool identification but no actual skill training.

Three programs offer a full-scale, structured preapprenticeship training component. Training runs from six weeks to seven months. In one case the training is designed to provide women with skills for a specific trade, whereas two programs provide exposure to a range of apprenticeable trades.

One program has made an effort to provide a work station. This effort has been limited by lack of space and insufficient funds for equipment or staff. Programs that have no hands-on training were interested in the availability of such a program as a means for women to explore alternatives or acquire general knowledge of tools.

Cost per individual in the preapprenticeship programs was significantly greater than in the outreach programs. The cost of preapprenticeship varied from $3,500 to $7,000 per woman served and was as high as $10,000 per woman placed, whereas the cost of outreach programs varied from $200 to $500 per person served and from $700 to $1,200 per person placed.[4]

## Follow-up

A follow-up component is considered essential by all programs, but most programs receive no funding to perform the service. For many women the most difficult adjustment period is the first few months after admission to apprenticeship. Support at this juncture may be as critical for women as gaining admission to apprenticeship. Most programs want to provide follow-up services, but with staff already overcommitted they find it too difficult. Many of the programs encourage the organization of a support group of women apprentices as a follow-up component. Some programs provide staff support to these groups, but none support groups exclusively for women.

Programs that make an effort to place women in apprenticeship in industrial plants need to address the fact that admission to apprenticeship based on a union contract is granted almost exclusively to women already employed. Placements in semi-skilled jobs in these instances may lead to apprenticeship. Without follow-up, there is no way for the program to assist those who are placed in such semi-skilled jobs who seek to move into an apprenticeship six months to a year later.

The number of placements made by a program are probably underreported due to their limited follow-up capacity. The major programs serving minority men have developed a better feedback system through the Bureau of Apprenticeship and Training (BAT).

## Other Critical Factors

The political, social, and economic climates of the area in which they operate are crucial to the success of apprenticeship placement programs. The political climate includes the support of the program by the compliance agencies, including the Office of Federal Contract Compliance Program (OFCCP), the Bureau of Apprenticeship and Training, and the State Apprenticeship Councils, as well as the political organizations that respond to the influence of women and women's organizations. The social climate includes the existence of a network of women who have an internal communication system and the readiness of the community to accept and support women in nontraditional roles and employment. The economic climate is also crucial: if there are few openings for apprenticeships, the competition is greater, thus eliminating some women who might have been admitted under more favorable circumstances.

Additional critical factors are internal constraints such as the staff's capabilities and training, their knowledge of apprenticeship, and their relationships with JACs and employers. The confidence of JACs and employers in the applicants often depends on their perception of the program staff.

## Availability of Women Interested in Apprenticeship

The observations of the research staff involved in the 1977 study and the present study, as well as those of the staff of programs serving women, are that there have been substantial increases in the number of women seeking to enter apprenticeship since the implementation of the federal regulations in 1978. There has also been an improvement in the success rate of women seeking admission. This is confirmed by the data from the state and national program statistics (SNAPS) of the Bureau of Apprenticeship and Training, which reported 5,870 women apprentices at the end of 1977 and 11,006 at the end of 1979, a rise of 87 percent in the two years following promulgation of the regulations.[5]

Employers, contractors, unions, and other sponsors of apprenticeship programs report that they are experiencing difficulty in meeting the requirements of the regulations for women in construction and other apprenticeships because they are unable to recruit enough interested women. On the other hand, organizations that recruit women claim that it is still difficult to place women, due to the reluctance of employers and unions to hire the women who apply and are qualified for apprenticeship.

To a degree, both contentions are accurate. More women are applying and more employers are requesting the referral of qualified applicants, but most programs designed to serve women are functioning at the same level of staff and fiscal resources available prior to the issuance of the regulations. The capacity of the programs to serve all the women who want service is therefore severely limited. Based on the 1977 study,[6] we have every reason to believe that the majority of women, except those in semi-skilled employment in industries where access to apprenticeship is controlled by union contracts, enter apprenticeship with the assistance of an apprenticeship outreach program, a preapprenticeship program, or an employment and training program. For women, success may depend on the existence of a suitable program. Some employers and unions are still reluctant to employ their first woman; some programs are limited to serving only women who are CETA eligible; many CETA staff do not refer all the interested applicants to preapprenticeship programs. Some programs limit their service to women who have attended college, and some programs will not serve women who exceed maximum admission ages, which are still being enforced in many areas. Many programs place their primary emphasis on one minority group or another.

## Definition of Applicants

In order to dispel the misperception that women are not available, we have sought to determine the number of women applicants being served by the programs compared to the number of women being placed. This is difficult because the programs themselves use different definitions of applicants and report placements of quite different character.

Three of the programs in our sample receive their funds from state or local CETA grants, and program participants are limited to those who are CETA eligible. Women recruited by these programs are referred to CETA for intake. Frequently these women are not referred back to the program. CETA intake workers and counselors often lack information or skills to identify likely candidates or to persuade those who might be interested but are hesitant. They often dissuade rather than encourage women who are interested. For these reasons CETA has not been able to identify and refer enough suitable candidates to fill all the program slots. There is no way to determine how many women are eliminated before they reach the program.

A fourth program, confined to a particular manufacturing plant, locates persons who are employed in the plant to tutor women in preparation for apprenticeship. The contract for this program requires that 20 percent of those tutored must be women. It is impossible to estimate the number of women who might seek the tutoring service if appropriate outreach were carried out among the women employed in the plant.

For this paper, we have concentrated on the remaining six projects, all of which are funded by Title III of CETA.[7] Four of these programs define applicants as all women who seek placement in nontraditional jobs by filling out an application. The remaining two projects require participation in an orientation program prior to filling out an application. The theory is that some women will decide not to participate in the program on the basis of the information provided in the orientation. Only those who seek the service of a counselor following orientation are considered applicants.

## Definition of Placement

The definition of placement varies among the programs. We have used a definition of placement that corresponds to the contractual definition for the CETA programs--placement in a nontraditional job paying $4.00 or more an hour. All placements in occupations in which more than 25 percent of those employed are women and all placements at less than $4.00 an hour have been eliminated unless the placement was a bona fide apprenticeship. Some programs offer a wide range of employment services, including service to women seeking professional and clerical occupations. These placements have not been included. Utilizing these definitions, table 1 contains preliminary data based on the period from April 1, 1979, to September 30, 1979 (June 1, 1979, to November 30, 1979, for Denver).

## The 1978 Regulations on Affirmative Action

The U.S. Department of Labor has found the establishment of Affirmative Action Plans (AAPs) with goals and timetables to be the most concrete and effective system for increasing the representation of persons in employment areas in which they have not been represented in

Table 1. Placement Rates for Recruitment Programs in Six Selected Sites, 1979

| | Cleveland | Chicago | San Francisco | Denver | Houston | Los Angeles | Total (six projects) |
|---|---|---|---|---|---|---|---|
| # of Applicants | 145 | 186 | 333[a] | 445 | 56 | 98 | 1,236 |
| # Placed | 21 | 38 | 74 | 79 | 20 | 30 | 262 |
| % Placed | 14.5 | 20.4 | 22.2 | 17.8 | 35.7 | 30.6 | 20.7 |

Note: All data from the programs are preliminary figures based on a period from April 1, 1979, to September 30, 1979 (except for Denver which is from June 1, 1979, to November 30, 1979).

a. An additional 486 women participated in the orientation phase in San Francisco.

proportion to their availability.[8] Regulations designed to bring about equal employment for women in apprenticeship programs were issued in April and May 1978. On the basis of these regulations, all affirmative action plans for apprenticeship programs are now required to establish goals and timetables for women as well as minorities, both in construction[9] and in all other apprenticeable occupations covered by contracts subject to the Executive Order 11246.[10] Title VII of the Civil Rights Act also requires an affirmative action plan when patterns of discrimination are found. Affirmative action goals were established by the new regulations for all apprentices, based on 50 percent of the percentage of women in the work force[11] (except for construction apprentices) to be as follows:

| Time Frame | Goals for Employment of Women |
|---|---|
| From April 1, 1978 - March 31, 1979 | 3.1 % |
| From April 1, 1979 - March 31, 1980 | 5.1 % |
| From April 1, 1980 - March 31, 1981 | 6.9 % |

These goals prevail except where higher goals are required by state or local jurisdictions. The goals established in 29 CFR 30 and 41 CFR 60.4 stipulate that 11.5 percent of all apprentices should be women as of April 1, 1979, and 12.5 percent should be women as of April 1, 1980.[12]

## The Impact of Goals and Timetables

Although there have been many complaints about the imposition of goals and timetables, they have produced remarkable results where they have been implemented. In the year following the issuance of the revised regulations (29 CFR 30 and 41 CFR 60.4), there was a rise in the percentage of women apprentices in every state except Missouri. There was a total rise of all women apprentices from 1.7 percent in 1976, to 3.1 percent in 1978, to 3.7 percent in 1979.

The city of Seattle has had a 12 percent goal for female employment on construction contracts since 1974, five years prior to goals being established for women on federal contracts. Reports from selected JACs in Seattle show that in 1975 1.0 percent of the apprentices in the programs were women. By June 1979, although there had been a 68 percent expansion of the total number of apprentices in these programs, the percentage of women apprentices had risen to 5.7 percent. In the following seven months there was a further 16 percent rise in the total number of apprentices.[13]

The U.S. Maritime Commission, which enforced the 1978 regulations in the shipbuilding industry, began requiring goals for women in 1972, and they have had an expanding number of women apprentices in construction-like jobs (e.g., carpentry, sheetmetal work, and plumbing) in the shipyards ever since.

Due to the use of goals and timetables, minority apprentices represented 17.3 percent of all apprentices at the end of 1978.[14] This was only 0.7 percentage points less than the percentage of minorities in the population (18.0 percent).[15] Twenty-nine states had met or surpassed their minority goals. Another five states came within 10 percent of their goals, and another four states came within 20 percent of theirs. Only twelve states and the District of Columbia were more than 20 percent short of their goals. Given an equivalent effort, women could achieve similar positive results.

Although only one state has achieved its goals for women, twelve states have come within 50 percent of meeting theirs among the new apprentices during the calendar year 1978 (see table 2). Preliminary data for 1979 indicate that many states are even closer to meeting the established goals. As shown in table 3, an additional five states (although they had not reached 50 percent of their goal) had more than three hundred women apprentices.

## Meeting Affirmative Action Goals

The goal of Apprenticeship Outreach Programs (AOPs) is to assist interested and qualified women in gaining access to apprenticeship and to assist employers in meeting their affirmative action plans. In order to accomplish these objectives, the regulations serve as a useful guide. The number of women entering apprenticeships should be representative of the women normally available in the relevant labor market and should, insofar as feasible, proportionately reflect the racial and ethnic groups normally available in the relevant labor market. The percentage of women (minority and nonminority) who participate as apprentices in a particular trade should be similar to the percentage of women (minority and nonminority) in the relevant labor force who can pass or be prepared to meet the job-related qualifications for apprenticeship.[16] An employer may be in violation if a particular group is employed in a manner that substantially differs from the norm. Each element in the employer's recruitment, testing, and employment practices must then be examined to identify and eliminate the disparities.[17]

The regulations further require that employers' procedures and programs not only identify, recruit, and train women apprentices (minority and nonminority), but also must participate in programs designed to motivate their participation.[18] In order to accomplish

Table 2. Percentage of Women Apprentices in Selected States

| State | % of entering apprentices who are women | State | % of entering apprentices who are women |
|---|---|---|---|
| Virginia | 13.3% | Montana | 7.7% |
| Rhode Island | 10.6% | Nevada | 7.5% |
| Georgia | 9.0% | Nebraska | 7.3% |
| New Hampshire | 8.9% | Hawaii | 6.5% |
| Louisiana | 8.3% | Utah | 6.5% |
| Wisconsin | 7.8% | Alaska | 6.3% |

Source: State and National Apprenticeship Program System, U.S. Department of Labor, 1979 (end of period data).

Table 3. Number of Women Apprentices in Selected States

| State | # of women apprentices | State | # of women apprentices |
|---|---|---|---|
| California | 1,459 | Washington | 412 |
| Texas | 523 | Ohio | 302 |
| Michigan | 503 | | |

Source: State and National Apprenticeship Program System, U.S. Department of Labor, 1979 (end of period data).

these purposes, an employer should institute a recruitment campaign, particularly if an employer's recruiting procedures indicate that applicants have not applied proportionately to their race, sex, or ethnic group's presence in the labor market. This is particularly true where special recruiting or other programs cause the pool of women candidates to differ from the normal pool of applicants from that group in the labor force. Affirmative action plans require that an adequate outreach and recruitment system be designed to increase the number of women who become eligible for selection. Outreach must be designed to increase participation of women in apprenticeship by expanding the opportunity for qualified and interested women to become eligible for apprenticeship selection.[19] If no such program is in existence, the employer is expected to initiate a program and may seek assistance from the Department of Labor. When circumstances warrant, the department may provide financial or other assistance.[20]

## Preliminary Analysis of the Data

The six SMSAs for which preliminary data are available have been examined in light of the 1978 regulations on affirmative action to determine whether the percentage of women apprentices are representative of women in the labor force in their area.

Published SNAPS data are maintained by race and separately by sex for the entire state. The Bureau of Apprenticeship and Training indicates that the data are now being requested by race and by sex for 1979; however such data are still not generally available. We have obtained the best data available by race and by sex in order to determine whether the percentage of women apprentices in each SMSA resembles the percentage of women in the labor force in each SMSA. According to BAT, apprenticeship data for local areas are kept on the basis of the location of the sponsor of the apprenticeship program, rather than by residence of the apprentice. Since most apprenticeship programs recruit from the entire SMSA, the SMSA rather than the central city constitutes the labor force area for most apprenticeships. In a few cases JACs recruit statewide, or for an area larger than the SMSA.

### Representation of White Women in Apprenticeship

To meet the requirements of the regulations there should be approximately the same percentages of white men and white women among the apprentices in these cities, since the percentage of white women apprentices should be relatively similar to their participation in the labor force (see table 4).

Table 4. Apprenticeship Participation of White Men and Women from Six Selected Sites, 1979

| SMSA | Men |  | Women |  |  |  |
|---|---|---|---|---|---|---|
|  | % white apprentices in the SMSA[a] | % white in labor force | % white apprentices in the SMSA[a] | % white in labor force | % white applicants | % white placements |
| Chicago | 77.1 | 78.4 | 70.5 | 77.9 | 5.4 | 13.5 |
| Cleveland | 83.8 | 82.6 | 60.0 | 79.7 | 7.6 | 14.3 |
| San Francisco | 69.0 | 67.9 | 69.1 | 67.0 | 71.3 | 77.0 |
| Los Angeles[b] | 64.4 | 61.8 | 66.0 | 61.8 | 29.6 | 50.0 |
| Denver | 75.8 | 82.0 | 84.1 | 86.7 | 68.3 | 65.8 |

Source: Unpublished data provided by the Bureau of Apprenticeship Training to the regional offices of U.S. Department of Labor.

a. Data provided by the Region V and Region VI, BAT and the Division of Apprenticeship of the state of California. No data could be obtained for Houston.

b. Los Angeles County only.

For the five SMSAs shown in table 4, preliminary analysis of the patterns of apprenticeship indicates that white women are not being recruited into apprenticeship in all cases in relation to their presence in the labor force. In the Chicago and Cleveland SMSAs, the percent of white women apprentices is much lower than the percent of white women in the labor force. These two SMSAs also have a lower percent of white women than white men apprentices.

The AOP programs in our sample operating in these SMSAs have an even lower percentage of white women applicants and placements in their programs. In Los Angeles, where the AOP is serving mainly Hispanic women, only 30 percent of the applicants are white women who are non-Hispanic. Although 50 percent of the placements are white women, the total number of placements is low, as shown earlier in table 1.

Interviews with other AOP programs operating in the same SMSAs reported the same phenomena. All programs that were originally serving black men were serving women who were predominantly black; programs that were originally serving Hispanic men were serving women who were predominantly Hispanic. Unless a program has the original charge of serving all women, it is likely to continue to serve women within the same racial or ethnic group as the men it has been serving.

A major factor affecting this distribution was the fact that AOPs recruited mainly from the central city. Forty-three percent of Denver's recruitment came from the SMSA outside of the city; 31 percent of the recruits from San Francisco and Los Angeles came from outside of the city, whereas only 11 percent of those recruited in Chicago came from outside of the central city.

## Minority Applicants and Placements

Data from the programs placing an emphasis on minority women are shown in table 5. They indicate that these programs are successfully recruiting minority women. Seventy-nine percent of the women recruited in black programs are black, and 53 percent of the women recruited in the Hispanic programs are Hispanic. This is not unexpected, since these programs were originally designed to serve minority men, and in assuming the responsibility for recruiting women these programs have continued working with those minorities they know best. It is also not surprising that there is a direct relationship between the number of minority women who apply and the number who are placed. It is important that minority women have the opportunity for placement in apprenticeship, but there are few additional resources in these SMSAs funded to serve all women.[21] There is clearly a need to serve other women in the SMSA if the goals of affirmative action are to be realized.

Table 5. Female Applicants and Placements by Race from Six Selected Sites, 1979

| | Agencies serving all women | | Agencies serving mainly black women | | Agencies serving mainly Hispanic women | |
|---|---|---|---|---|---|---|
| | # | % | # | % | # | % |
| APPLICANTS | | | | | | |
| White | 540 | 69.6 | 40 | 10.3*** | 29 | 29.6*** |
| Black | 117 | 15.1 | 305 | 78.8*** | 5 | 5.1** |
| Hispanic | 79 | 10.2 | 35 | 9.0 | 52 | 53.1*** |
| Other[a] | 40 | 5.2 | 7 | 1.8 | 12 | 12.2** |
| Total | 776 | 100.0 | 387 | 99.9 | 98 | 100.0 |
| PLACEMENTS | | | | | | |
| White | 109 | 71.2 | 18 | 22.8*** | 8 | 26.7*** |
| Black | 14 | 9.2 | 57 | 72.2*** | 2 | 6.7 |
| Hispanic | 19 | 12.4 | 3 | 3.8 | 14 | 46.7*** |
| Other[a] | 11 | 7.2 | 1 | 1.3 | 6 | 20.0* |
| Total | 153 | 100.0 | 79 | 100.0 | 30 | 100.00 |
| % APPLICANTS WHO WERE PLACED | | | | | | |
| White | | 20.2 | | 45.0*** | | 27.6 |
| Black | | 12.0 | | 18.7*** | | 40.0 |
| Hispanic | | 24.1 | | 8.6 | | 26.9 |
| Other[a] | | 27.5 | | 14.3 | | 50.0 |

Note: All data from the programs are preliminary figures based on a period from April 1, 1979, to September 30, 1979 (except for Denver which is from June 1, 1979, to November 30, 1979.) Applicants and placements were tested to determine if the difference between the proportions in the two groups was significant. The level of significance is indicated by the number of astericks after the appropriate variable. * indicates $p < .05$, ** indicates $p < .01$, *** indicates $p < .001$. Comparisons were made with data from the programs in cities in which agencies were organized to serve all women.

[a] Includes Asian and American Indians and those where race/ethnic origin is not available.

Furthermore, the two programs that are designed to serve all women are placing a major emphasis on reaching minority women. Thirty percent of all women applicants and 29 percent of all women placed were minority women. The percentage of minority participants served by these two programs is nearly the same as the percentage of minority women in the labor force in these areas. In both of these SMSAs there are also other programs funded by the U.S. Department of Labor that serve minority women.[22] As indicated earlier, the regulations require that nonminority women as well as minority women be included in the goals and timetables in relationship to their presence in the labor force; the regulations require that employers recruit women into apprenticeship in proportion to their presence in the labor force.

The total figures for the six projects show that of five women who apply only one is placed. Several hypotheses are being tested to account for this disparity, which will be analyzed in the final report. Since all these AOPs are funded at relatively the same level, it is possible that programs with a large number of applicants might have more placements if staff had more time to serve each applicant. If more services are needed, what are the costs that will produce the greatest relative benefit? How many of the critical factors are dependent upon the characteristics of women and how many are dependent upon the characteristics of the staff and program? How much is related to the climate of the city? In order to address the issue, it is important to determine whether this low proportion of women placed is due to the unwillingness of women to continue in the program or the unwillingness of the employers and unions to accept women into apprenticeship. It must also be determined whether the outreach program model is appropriate to meet the needs of women to gain access to apprenticeship in the 1980s.

In evaluating these programs, the U.S. Department of Labor places an almost exclusive emphasis on placements. This works against a woman's program that invests a major effort in changing the social or political climate of a city in an effort to increase the number of women gaining admission to apprenticeship. Changing the climate increases the number of apprenticeable opportunities for women, but these new opportunities need not necessarily be filled by the program. Such an effort to affect the climate, therefore, might not reward the program, even though it may have a greater influence on the number of women who are placed in apprenticeships than does direct service to individual women.

## Characteristics of Apprentices

Preliminary data on two characteristics--age and education--are available for the six SMSA areas. Both of these characteristics are important because several programs limit their intake on the basis of education and age.

Age has frequently been described as a barrier to admission to apprenticeship because most apprenticeship programs have had age requirements in the past. Many unions and employers still limit access to apprenticeship to those 25 years of age or under. In some cases, the limitations are set at 26 or 28 years of age, but if limitations are placed, they are usually always under 30 years of age. In California, where a statute prohibits upper age limits, San Francisco has more applicants who are over 30 years of age than any other city, and 40 percent of its placements are of those over 30 years of age. For the women over 30 who apply, their placement level is significantly better than women under 30 years of age. The upper age limit does not appear to be the most critical factor in women's entry into apprenticeship. Since 30 percent of all the women placed by the six programs are over 30, it suggests that more older women could be placed if they would apply. If age limitations were eliminated by stronger regulatory language or by legislation, it is likely that more would apply and even more would be placed. This suggests that greater effort in working with younger women would result in more placements in apprenticeships.

As indicated in table 6, one half of all applicants are 25 years of age and under. There is no significant difference in the percentage of applicants who get placed between those 25 years and under and those 26 to 29 years of age. Yet in several cities, the placement rate for those 25 years and under is considerably lower than the placement rate for the aggregate.[23]

## Education

Education is an important factor in examining access to apprenticeship, since JACs and employers usually require a high school diploma or a General Equivalency Diploma (GED) to qualify for entry into apprenticeship. As shown in table 7, there is great variance among the programs in the percentage of applicants who have not completed high school. In three of the programs more than 30 percent of the applicants do not have high school diplomas. In the other three programs less than 10 percent of the applicants do not have a high school diploma or GED. The final report will investigate whether those who do not have a diploma obtain placements in apprenticeship or are placed in other nontraditional jobs.

The rate of placement for women who do not have a high school diploma is only slightly more than one in ten applicants. Given the limited resources available to programs serving women, women who have not graduated from high school may be better served by being referred

Table 6. Age of Applicants from Six Selected Sites, 1979

| | Number of women | Percentage of women |
|---|---|---|
| AGE OF APPLICANTS | | |
| 25 years and under | 617 | 50.2 |
| 26-29 years | 357 | 29.1[a] |
| 30 years and over | 254 | 20.7 |
| Total | 1,228 | 100.0 |
| PLACEMENTS | | |
| 25 years and under | 118 | 45.6 |
| 26-29 years | 64 | 24.7 |
| 30 years and over | 77 | 29.7 |
| Total | 259 | 100.0 |
| % APPLICANTS PLACED | | |
| 25 years and under | | 19.1 |
| 26-29 years | | 17.9 |
| 30 years and over | | 30.3[b] |

Note: All data from the programs are preliminary figures based on a period from April 1, 1979, to September 30, 1979 (except for Denver which is from June 1, 1979, to November 30, 1979).

a. There is no significant difference between women 25 years and under and women 26-29 years old.

b. $p=<.0001$.

Table 7. Education of Applicants from Six Selected Sites, 1979

| | Number of women | Percentage of women |
|---|---|---|
| APPLICANTS | | |
| No High School Diploma | 196 | 15.7 |
| High School Diploma/GED | 386 | 30.8 |
| Some College | 670 | 53.5 |
| Total | 1,252 | 100.0 |
| PLACEMENTS | | |
| No High School Diploma | 22 | 8.0 |
| High School Diploma/GED | 44 | 34.2 |
| Some College | 159 | 57.8 |
| Total | 275 | 100.0 |
| % APPLICANTS PLACED | | |
| No High School Diploma | | 11.2[a] |
| High School Diploma/GED | | 24.4 |
| Some College | | 23.7[b] |

Note: All data from the programs are preliminary figures based on a period from April 1, 1979, to September 30, 1979 (except for Denver which is from June 1, 1979, to November 30, 1979).

a. p=<.001.

b. There is no significant difference betwen high school graduates and women with some college.

to appropriate agencies to obtain their GED prior to admission to these programs.

There is no significant difference in the placement rate between high school graduates and women who have had some education beyond high school. Some programs either discourage applicants with some college experience or have very few who apply. Yet women in this category have no alternative services available to assist them in gaining admission to apprenticeship; education should not be considered a reason to bar them from programs.

## Resolving the Problem

If the goals of the regulations are to be met, a system must be devised to recruit and prepare many more women capable of becoming apprentices. Preliminary analysis suggests that to achieve this goal, all agencies, Apprenticeship Outreach Programs (AOPs), the Bureau of Apprenticeship Training, State Apprenticeship Councils, CETA offices, prime sponsors, and Title III preapprenticeship agencies must expand their services to all women interested in apprenticeship, while continuing their efforts to assist minorities and men.

Where AOPs have not been limited to recruitment of minority women or women who are CETA eligible, there seems sufficient evidence that more interested women have been identified than the staff has the capacity to serve. More women could be placed if they were recruited across a broad base. This can be achieved only if the programs have adequate staff to serve all the women so recruited. This is not to suggest that there should be an elimination of programs designed to recruit and prepare minority women or women who are CETA eligible. However, the preliminary data indicate that the more broadly based programs reach and place more women.

For those employers and unions unwilling to hire women, regulations cannot in and of themselves be relied upon to accomplish the goals of the U.S. Department of Labor. The regulations[24] require that the department conduct compliance reviews of apprenticeship programs upon receipt of complaints; appropriate action is then required if programs are not in compliance. Most of the AOPs hesitate to take too active a role in complaints for fear that this will reduce their ability to work cooperatively with unions and employers. However, many of the AOPs indicate that employers or unions respond almost immediately to a telephone call from the Office of Federal Contract Compliance, when such a call is made, but OFCCP does not always make the telephone call.

The potential for increased placement of women in apprenticeship exists; it requires that the government have enough commitment to provide the support needed to make the regulations work, both by funding enough programs and staff to service all interested women and by providing prompt and vigorous enforcement of the regulations. If such an effort were undertaken, more qualified women would be available for and would be placed in apprenticeship.

## Notes

1. The information in this paper is based on an 18-month study being sponsored by the U.S. Department of Labor, Division of Apprenticeship Research and Development. This paper was prepared during the ninth month of the study. Only preliminary findings, therefore, are presented.

2. Rj Associates, Problems of Women in Apprenticeship (Arlington, Va).

3. Robert Glover, Kenneth Tolo, and John Gronowski, Preparation for Apprenticeship through CETA, 1979.

4. Cost factors are preliminary figures: more precise figures will be available before completion of the study.

5. Unpublished SNAPS data made available to the authors.

6. Rj Associates, Problems of Women in Apprenticeship.

7. One program receives half of its funding through the local prime sponsor. Intake is carried out by the program and is virtually the same except for CETA eligibility, which is determined at the point of intake. CETA eligible women are referred to a different group of counselors and are entitled to certain limited support services that other women are not entitled to. Otherwise there is no observed difference between the programs.

8. Federal Register, April 7, 1978, 41 CFR 60.4.

9. 41 CFR 60.4.6.

10. Federal Register, May 23, 1978, 29 CFR 80.

11. 29 CFR 30.

12. Sixty percent of all apprentices are in construction. Using 5.1 percent, the goal for women in construction for 1979 is 3.1 percent. The goal for women in all nonconstruction apprenticeships (40 percent of all apprentices) is 50 percent of the female labor force participation rate (which is 42 percent) or 21 percent. Therefore, 8.4 percent is the goal for nonconstruction apprentices. Adding 3.1 percent to 8.4 percent, a total of 11.5 percent of all apprentices is the goal for female apprenticeship.

13. State of Washington, Department of Labor Statistics.

14. SNAPS 1978 data.

15. SIE 1976 data.

16. 29 CFR 30.4 (e).

17. Federal Register, April 7, 1978, p. 14,891.

18. 29 CFR 30.4 (b).

19. 29 CFR 30.4 (c).

20. 29 CFR 30.4 (d) (5) and (10).

21. A Title II program has recently been funded to Urban League and Midwest Women's Center in Chicago, serving a cross-section of young women. Data are not yet available on that program. There is an HRDI program in Cleveland where the major emphasis is on career awareness programs for in-school black youth, both young men and young women. In Los Angeles, there is a LEAP program serving black women, but no program serving white women.

22. In San Francisco, Apprenticeship Opportunity Foundation and BACOP in Oakland; in Denver, a LEAP Program.

23. The average percentage of applicants who were placed for Cleveland, Chicago, and San Francisco was 15 percent; for Denver, Los Angeles and Houston it was 23.8 percent.

24. 29 CFR 30.9.

# OVERCOMING BARRIERS TO SUCCESSFUL ENTRY AND RETENTION OF WOMEN IN TRADITIONALLY MALE SKILLED BLUE-COLLAR TRADES IN WISCONSIN

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Over the past seven years, there has been growing dissatisfaction with the status quo of occupational segregation. It is being increasingly recognized that occupational segregation is closely interconnected with the income gap (in 1978, full-time, year-round women workers earned 59 cents for every dollar earned by men) and with the disadvantages suffered by women in the employment market. This recognition has led to increasing pressure for change from feminist and women's organizations, which has in turn led to changes in official policy in the U.S. Department of Labor. In 1971, Order 4, issued by the Office of Federal Contract Compliance, was revised to include goals and timetables for women in affirmative action mandated for nonconstruction contractors with the federal government. In 1978, goals and timetables for women were extended to construction contractors on federally funded projects and to the equal opportunity regulations for apprenticeship. Government funds are increasingly being tapped for outreach and demonstration efforts to break down the sex barriers in employment and to open traditionally male blue-collar unskilled, semi-skilled, and skilled jobs to women.

Occupational segregation has been remarkably constant over the years. This pattern has persisted through years in which there have been profound changes in occupational structure and technological changes that have in many cases altered job content. Very little is known about the factors that lead to the continuation of occupational segregation or to the identification of one job as being suitable for men and another as being suitable for women. Sex segregation is manifest in most industries and throughout all job levels: workers generally are clustered by occupation or job classification by sex whether they are university vice-chancellors, grade school teachers, nurses, or garbage collectors.

Official government policy is clearly dedicated to changing the long-standing custom of sex segregation in paid employment. Little, however, is known about how best to do it. Preliminary research has demonstrated that women entering traditionally male blue-collar jobs in utility companies meet with significantly more resistance and have more problems performing the job than women entering traditionally male white-collar jobs.[1] Yet efforts to move women into skilled and semi-skilled blue-collar, traditionally male jobs are intensifying.[2] The results of the federal regulations changes of 1978 can be seen in the vastly increased numbers of women starting in apprenticeship, which has traditionally been associated with male skilled trades.

Since 1971 there has been a plethora of newspaper and magazine articles about women in blue-collar jobs and women entering the skilled trades. These articles have usually focused on one or several individual women who have begun to work in trades traditional to men. They have recounted success stories and put them forward as role models for other women with similar aspirations. More recently, a few stories have described, some in lurid detail, the harassment of the new or only woman on the job by her male co-workers. The basic purpose of most of these articles, however, is to draw attention to the dramatically unusual or inspirational, so the large number of such stories is no reflection of the amount of serious research that has been conducted on the subject and no indication of substantive findings that could help explain what happens when women move into previously all-male jobs. There have been almost no substantive research studies taking women in skilled blue-collar trades as their subject and virtually nothing is known about the dynamics of the situations encountered by women entering and successfully staying at work in blue-collar skilled job enclaves that had previously been all male.[3]

## Research in Wisconsin

The state of Wisconsin has sought to identify those factors that inhibit or foster success and acceptance of women in traditionally male skilled blue-collar trades. Toward this end, the state has conducted two women in apprenticeship projects--one from 1970 to 1973 and one beginning in 1980. The grant proposal for the current study indicates that answers to the following questions will help identify what can be done to facilitate long-term acceptance of worker integration by sex in the blue-collar skilled trades:

1. What are the different work and social skills of the women who selected and succeeded in entering a traditionally male skilled trade, and what are the circumstances on the job site?

2. What factors predispose peers and supervisors to help the women on the job; what factors encourage hazing, noncooperation, or actual harassment?

3. Does it make a difference if peers are a closed working group (i.e., permanent employees who might spend years together on the same shop floor) or are an open group (as on a construction site, at which the work teams frequently change, breaking up and reforming according to progress at different stages of construction)?

4. To what extent does resentment of male peers lead to difficulties in a woman's performance or to her eventual quitting or dismissal?

5. Are there significant differences in the success and retention rate of women in traditionally male skilled blue-collar jobs due to: age, the clash of family responsibilities with demands of the paid job, the need to perform shift work, or the degree to which the work is "dirty" and/or "heavy"?

6. At what point in training do dropouts occur and to what extent are these dropouts predicted by those involved?

7. Do women who have participated in preapprenticeship programs have more success in staying on the job than those who have not?

8. Do data show that informal, semi-formal, or formal support systems (e.g., a close friend or relative in the trade, a "buddy system") significantly aid successful retention in the apprenticeship?

It is hoped that answers to these questions will enable the researchers to share new insights into why some women successfully complete apprenticeship programs when others do not.

## The Status of Women in Apprenticeship in the Early 1970s

A study in 1972 by Thomas Barocci observed:

> The world of apprenticeship has been, and still remains, primarily the domain of the male. Only 10 percent of the respondents are female. Further, 42 of the 47 females were apprentices in cosmetology, and 39 of these are dropouts. The remaining few were scattered in other service occupations.... None of the women in the sample were involved in any of the traditional apprenticeable occupations in the construction, industrial or graphic arts trades.[4]

Barocci noted the high proportion of women who dropped out of their apprenticeship program but also the disproportionate number of all apprentices in the low-paying service occupations who did not complete. No doubt 10 of the 25 percent of apprentices surveyed who reported starting at less than the legal minimum wage were women and it would be reasonable to assume that the low pay to cosmetology apprentices had something to do with their high dropout rate. Overall, Barocci found that 21 percent of those who terminated gave low pay as the most important reason for dropping out (but he did not break responses down by sex). This was second in size only to the 24 percent who said they terminated because their employer was not fair to apprentices.

There was, concurrent with Barocci's study, a first Women in Apprenticeship project, funded by the U.S. Department of Labor in Wisconsin for three years from 1970 to 1973. The purpose of this research and development project was to find out why there were so few women apprenticed in the skilled trades and to isolate, analyze, and minimize the barriers to entry.

In 1970, at the outset of this project, women were 4 percent of the 8,547 apprentices indentured in the state and constituted one-third of the national total of women apprentices. They were largely (82.4 percent) apprentice cosmetologists; the remaining 17.6 percent were indentured as cooks and barbers or scattered throughout an additional seven trades.[5] At that time there were no women in Wisconsin indentured in any of the other 350 skilled trades and no women in any construction trade.

Among the barriers identified by the first Women in Apprenticeship project were: that sex stereotyping began at birth (pink for a girl, blue for a boy) and was reinforced by textbooks, counseling, and career preparation in the schools (industrial arts for boys, home economics and typing for girls) so that young women opted for jobs (now called pink-collar jobs) that carried no taint of unfemininity about them; that women in their late twenties or thirties who had learned from experience that they needed the paycheck more than the illusion of glamour were barred by age from apprenticeships; that the apprenticeship hierarchy was composed entirely of men (journeymen, supervisors, instructors, joint apprenticeship committees, and staff of government registration and information agencies); that almost all newspapers, job service offices, employers, and workers thought that jobs came naturally in two kinds--"men's jobs" and "women's jobs"; that the practices with regard to selection and recruitment for the skilled trades in the construction and manufacturing industries were predicated on the assumption that only men would be interested, qualified, selected, and suitable for them; that women's occupations were generally underrated as to the skill, effort, and responsibility required, considered low-status and thus offered low pay, and by definition did not qualify for the extensive on-the-job training required in an apprenticeable occupation. In short, women's work was, almost by definition, not apprenticeable.[6]

## New Opportunities for Women in Apprenticeship in the Seventies

Many of the expectations and practices that led to job segregation by sex that were almost universal in this culture in 1970 have been in process of change over the past ten years. Whereas in 1970 the conditioned biases of most people were preconscious, in 1980 large numbers are conscious of some of the sex biases they were raised to think represented the natural order of things. Moreover, there have been some changes and programs instituted that attempt to offset the traditional bias concerning who chooses (or is chosen for) what job in the labor force.

Table 1 illustrates the results of some of these changes in apprenticeship for women in Wisconsin. By January 1980, women were 5.5 percent of the 5,844 apprentices indentured in Wisconsin. The total number of women apprentices was 470, only 77 more than the 393 women counted in 1970, but in 1980 women spanned 37 trades, 11 of these being construction trades and 19 being traditionally male industrial trades.[7] There were 71 active women apprentices in the construction trades and 66 active women apprentices in traditionally male and male-intensive industrial trades.[8]

The small number of women shown in the graphic arts trades in January 1980 does not necessarily indicate that few women are now training for these trades in Wisconsin. Total state registered apprentices in graphic arts trades dropped from 643 at the beginning of 1970 to 50 at the beginning of 1980. State apprenticeship officials give as reasons for the drop in registration that the unions and employers have their own related instruction school in Milwaukee, thus they have little incentive to register with the state to gain the benefits of related instruction classes sponsored by the state vocational-technical school system. They say, also, that they think this industry has been reluctant to follow through on the equal opportunity commitment necessary for apprenticeship registration.

Though the 1978 State and National Apprenticeship System (SNAPS) figures indicate that in Wisconsin women were still only 4.8 percent of apprentices (and 41.4 percent of the whole state labor force), women were 7.8 percent of that year's entering apprentices.

The issuance of revised apprenticeship regulations (29 CFR 30, and 41 CFR 60) that for the first time included goals and timetables for women in the mandated equal opportunity efforts apparently gave a considerable boost to the numbers of women apprentices in the nation (from 1.7 percent of all apprentices in 1976 to 3.1 percent of all apprentices in 1978) and in the state of Wisconsin. Table 2 illustrates the spurt in the numbers of women in traditionally male or male-intensive apprenticeships between January 1979 and January 1980.

A better understanding of the growth and decline in numbers of women in the different trades can be gained by examining table 3, which shows apprenticeship starts by year and by sex and separates out several trades. The percentage of total female apprenticeship starts in 1979 (12.9 percent of the total) was not significantly greater than the percentage of female starts in 1970 (8.9). However, the separation of annual starts in traditionally female trades and in barbering reveals

Table 1. Total Numbers of Women Apprentices in Wisconsin by Trade, January 1, 1970, and January 1, 1980

| Industry group | Trade | Jan. 1, 1970 | Jan. 1, 1980 |
|---|---|---|---|
| Construction | Bricklayer | 0 | 2 |
| | Carpenter | 0 | 24 |
| | Electrician | 0 | 12 |
| | Painter/Decorator | 0 | 6 |
| | Plumber | 0 | 5 |
| | Sheet metal worker | 0 | 5 |
| | Steamfitter | 0 | 7 |
| | Operating engineer | 0 | 8 |
| | Asbestos worker | 0 | 1 |
| | Cement finisher | 0 | 1 |
| | Sprinkler fitter | 0 | 1 |
| Subtotal | | 0 (Men: 8,781) | 72 (Men: 8,463) |
| Industrial | Instrument mechanic | 0 | 2 |
| | Drafting | 1 | 4 |
| | Electrician (maintenance) | 0 | 8 |
| | Machinist | 0 | 20 |
| | Patternmaker | 0 | 2 |
| | Metal fabricator | 0 | 1 |
| | Tool and die trades | 0 | 14 |
| | Tool designer | 0 | 1 |
| | Welder | 0 | 2 |
| | Power engineer | 0 | 1 |
| | Miscellaneous | 0 | 1 |
| | Millwright | 0 | 4 |
| | Maintenance millwright | 0 | 4 |
| | Maintenance mechanic | 0 | 2 |
| | Pipefitter (maintenance) | 0 | 1 |
| Subtotal | | 1 (Men: 2,554) | 67 (Men: 3,114) |
| Service | Barber | 6 | 198 |
| | Cosmetologist | 98 | 106 |
| | Cook | 22 | 14 |
| | Dental Technician | 0 | 1 |
| | Optical Technician | 0 | 1 |
| | Watchmaker | 1 | 3 |
| | Business machine repair | 0 | 1 |
| | Small engine repair | 1 | 0 |
| | Day care teacher | 0 | 3 |
| | Glazier | 0 | 1 |
| | Miscellaneous | 1 | 0 |
| Subtotal | | 135 (Men: 1,637) | 328 (Men: 798) |
| Graphic Arts | Composition | 0 | 2 |
| | Preparation | 7 | 1 |
| Subtotal | | 7 (Men: 636) | 3 (Men: 47) |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.

Table 2. Women Apprentices in Wisconsin by Industry Group

| Industry Group[a] | 1974-78 Period | Total by Jan. 1980 | 1979 Increase # | 1979 Increase % |
|---|---|---|---|---|
| Construction (11) | 46 | 98 | 52 | 113 |
| Industrial (19) | 57 | 95 | 38 | 67 |
| Service (14) | 43 | 45 | 2 | 5 |
| Graphic Arts (2) | 20 | 21 | 1 | 5 |
| Total[b] (46) | 166 | 259 | 93 | 56 |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.

a. Figures in parentheses indicate number of trades in each group with women apprentices by January 1980.

b. Since barber apprenticeships in Wisconsin are no longer male-intensive, this trade is not included. Apprentice cooks are not included since cooking is generally considered to be traditionally female work. Computer programmer, case aide, and apprenticeship field representative apprentices are excluded because for the past two years all were state employees. Several other trades are excluded because in Wisconsin apprenticeship is no longer a viable way to learn the trade.

that the similarity in the aggregate masks several clear trends in the individual trades.

There is a marked decline in apprenticeship starts in cosmetology--from a total of 138 in 1970 to 74 in 1979. Wisconsin apprenticeship officials ascribe this development partly to the low pay earned by apprentices in this trade and partly to the fact that the 1970s have been lean years for the trade, since hair fashions for women (long and straight) have allowed many to manage their coiffure with fewer or no visits to cosmetology shops.

The vocational-technical school system offers another route to cosmetology, however, through one year of full-time schooling. Analysis of the vocational-technical system's records over the same period show a steady rise of entrants to the trade through the cosmetology school. In 1970, there were two cosmetology schools in the state that produced just over 150 graduates; in 1973-74 there were three schools and 212 graduates; in 1976-77 there were five schools and 296 graduates; and in 1978-79 the number of cosmetology schools had increased to six and the number of graduates to 362. When the apprentice and school figures are combined the total numbers of starts in the trade show a steady increase over the decade, from just below 300 in 1970 to 401 in 1976 to 448 in 1978.

During the same period, the numbers of starts in the barber trade increased from 109 in 1970 to 191 in 1979. What is even more striking is that while the barber trade as a whole is still male-intensive, in Wisconsin barber apprenticeships are now female-intensive. In 1970, there were eight women who started as barber apprentices, fewer than one in ten total starts; by 1975, the numbers of men entering barber apprenticeships had dropped to less than half and the number of women had increased fivefold, so that 1975 starts in barbering were divided equally between the sexes; by 1979, women accounted for over 75 percent of barber apprentice starts. The transition of a trade from being dominated by one sex to being taken over by the other sex in this way should provide fascinating material for an in-depth study of economic factors and dynamics of human interaction.

The final column in table 3 shows the impact of the 1970-1973 Women in Apprenticeship project. Whereas only 13 women entered training for trades other than barber and cosmetologist in 1970, the number grew steadily through 1973, when there were 67 female starts. Between the end of the first project and the impact of the inclusion of goals and timetables for women in the apprenticeship equal opportunity rules, the annual number of female starts in trades other than barbering and cosmetology hovered between the mid-twenties and the low forties. After the U.S. Department of Labor rules took effect, the numbers jumped again to the high seventies.

Table 3. Wisconsin Apprenticeship Starts by Sex, 1970-1979

| Year | Total | | Barbers | | Traditionally Female Trades | | | Female Starts, Other Than Barbers and Traditionally Female Trades |
|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | Cosmetologist | Home Health | Day Care | |
| 1970 | 1,898 | 168 | 101 | 8 | 138 | 0 | 9 | 13 |
| 1971 | 2,026 | 228 | 82 | 4 | 119 | 9 | 67 | 29 |
| 1972 | 2,410 | 244 | 72 | 11 | 102 | 21 | 67 | 43 |
| 1973 | 3,040 | 184 | 49 | 14 | 81 | 6 | 16 | 67 |
| 1974 | 2,464 | 137 | 37 | 20 | 88 | 0 | 4 | 25 |
| 1975 | 1,667 | 189 | 43 | 43 | 88 | 0 | 16 | 42 |
| 1976 | 2,007 | 214 | 47 | 60 | 105 | 0 | 5 | 44 |
| 1977 | 2,548 | 183 | 47 | 61 | 93 | 0 | 4 | 25 |
| 1978 | 2,839 | 276 | 46 | 110 | 86 | 0 | 2 | 78 |
| 1979 | 2,280 | 294 | 47 | 144 | 74 | 0 | 1 | 75 |
| Total | 23,179 | 2,117 | 571 | 475 | 974 | 36 | 191 | 441 |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.

Another result of the first Women in Apprenticeship project's recognition that many skilled jobs were considered nonapprenticeable simply because they were traditionally women's work, was the creation of apprenticeship programs for homemaker and home health aides and for day care teachers. Table 3 illustrates the sharp dwindling of registered apprentices in these trades once the special efforts of project staff were no longer available.

Even in 1970, before women had entered more than a handful of skilled trades, there was concern that new entrants not be trapped in what has been called the "revolving door" effect, whereby they enter only to drop out before completion. In 1973, the first Women in Apprenticeship project conducted a survey of the 187 women who had been apprenticed in Wisconsin during the period from 1970 through 1972. Of these, 85 percent from a total of 25 occupations responded.[9]

The most surprising finding of the 1973 survey was that the dropout rate for women apprentices was only 24 percent, while the dropout rate documented by Barocci in the other Wisconsin-based study, in which the sample was 90 percent male, was 50 percent. The comparison was not considered precise, however, since one study included active continuing apprentices and the other did not.

Table 4 compares the women apprentice status findings of the 1973 survey with that of the 262 women indentured into male-intensive apprenticeships in traditionally male trades during the years 1974 through 1979. Though the majority of women in the 1973 survey were in female-intensive apprenticeships, the patterns, by status, are remarkably similar.

The 38 dropouts who responded to the 1973 Women in Apprenticeship survey gave the following reasons for their failure to complete their apprenticeships:[10]

| | | Number | Percentage |
|---|---|---|---|
| 1. | Salary wasn't high enough for my needs | 6 | 15.7 |
| 2. | Moved out of state | 2 | 5.3 |
| 3. | I terminated my employment | 3 | 7.9 |
| 4. | Employer went out of business | 3 | 7.9 |
| 5. | Job was too far away (transportation) | 2 | 5.3 |
| 6. | Someone else was hired to fill my place | 2 | 5.3 |
| 7. | Full program hadn't begun | 3 | 7.9 |

Table 4. Status of Women Apprentices in Wisconsin, 1973 and 1980

| Apprentice status | 1970-1972 starts (surveyed 1973) | | 1974-1979 starts in traditionally male trades (analyzed Jan. 1980) | |
|---|---|---|---|---|
| | # | % | # | % |
| Active | 110 | 69.1 | 149 | 56.8 |
| Terminated | 38 | 23.9 | 74 | 28.6 |
| Graduated | 11 | 6.9 | 39 | 14.9 |
| Total | 159 | 99.9 | 262 | 100.3 |

Source: The 1973 data are from Patricia Mapp, Women in Apprenticeship, Why Not? (Washington, D.C.: U.S. Department of Labor, 1973); the 1980 data are from the Division of Apprenticeship and Training, State of Wisconsin.

6

| | | |
|---|---|---|
| 8. Health reasons | 2 | 5.3 |
| 9. Other individual reasons | 15 | 39.4 |

In 1973 no questions were asked about possible difficulties in integrating a woman apprentice into an all-male or predominantly male work environment because almost all of the women were apprenticed in traditionally female trades, but answers to the questions that were asked brought out some suggestive differences in numbers and percentages between dropouts and those who were active apprentices or had completed training (see table 5).

It will be interesting to see whether the women who have entered apprenticeships in traditionally male trades between 1974 and 1979 reflect the same pressures and concerns as the women surveyed in 1973, or whether they reflect the pressures reported by the (mainly male) apprentices who responded to other surveys.

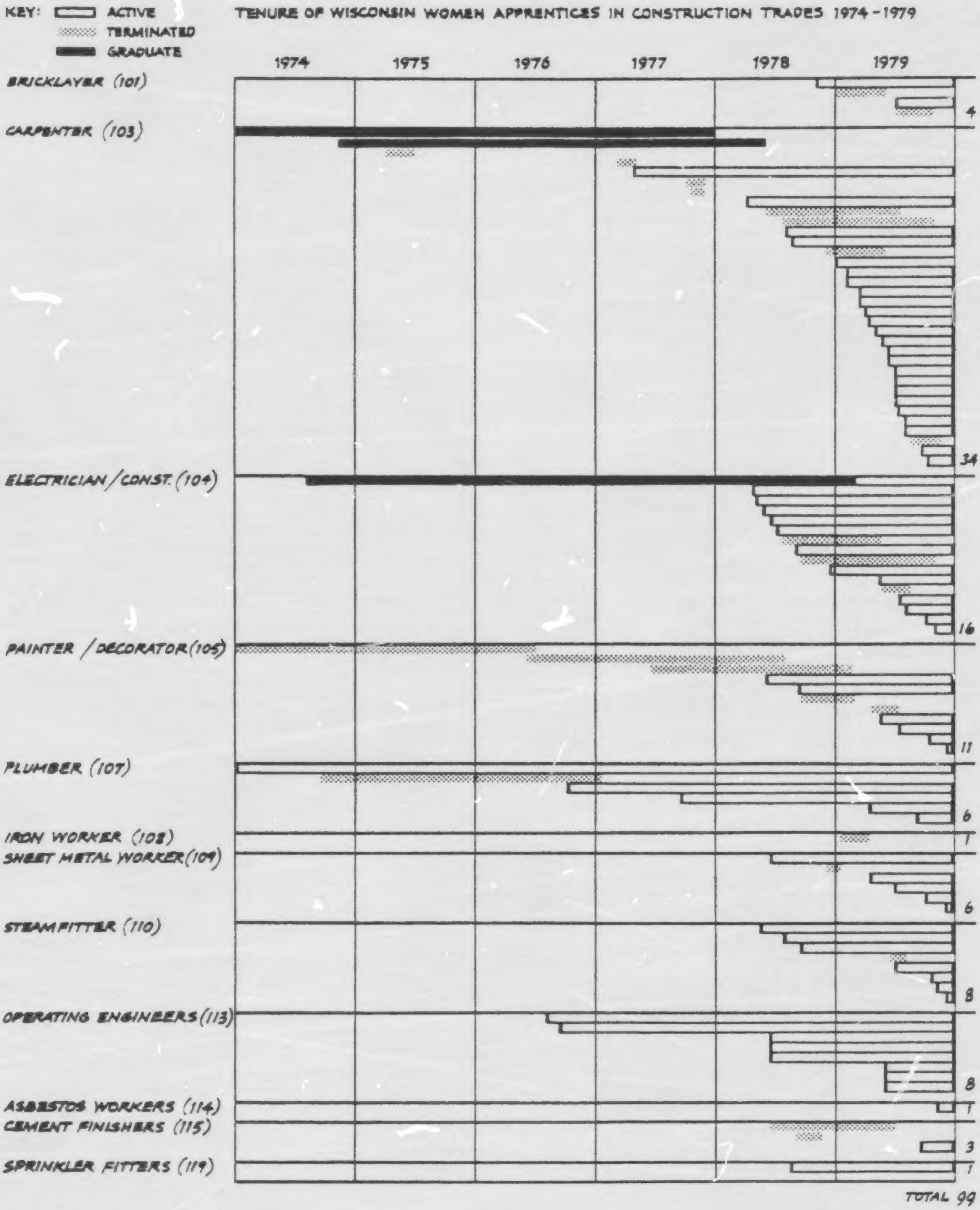
The ten years of computerized records available in 1980 allow for a far more accurate analysis of dropout rates than was possible in 1972 or 1973 and demonstrate the distorting effect of including active apprentices.

Table 6 shows the outcome, by sex and industry group, of all men and women who started their apprenticeships in Wisconsin in each year from 1970 through 1979. The higher dropout rate of female apprentices in the service trades can probably be explained by their very low wages. There is clearly a somewhat higher dropout rate of female than male apprentices in the construction trades, though it is not as high as had been predicted by some supporters of the "keep the industry male club." Despite the fact that women are newcomers to the industrial skilled trades, their dropout rates in Wisconsin so far are very similar to those of their far more numerous male counterparts.

## Population Data for the Period from 1974 through 1979

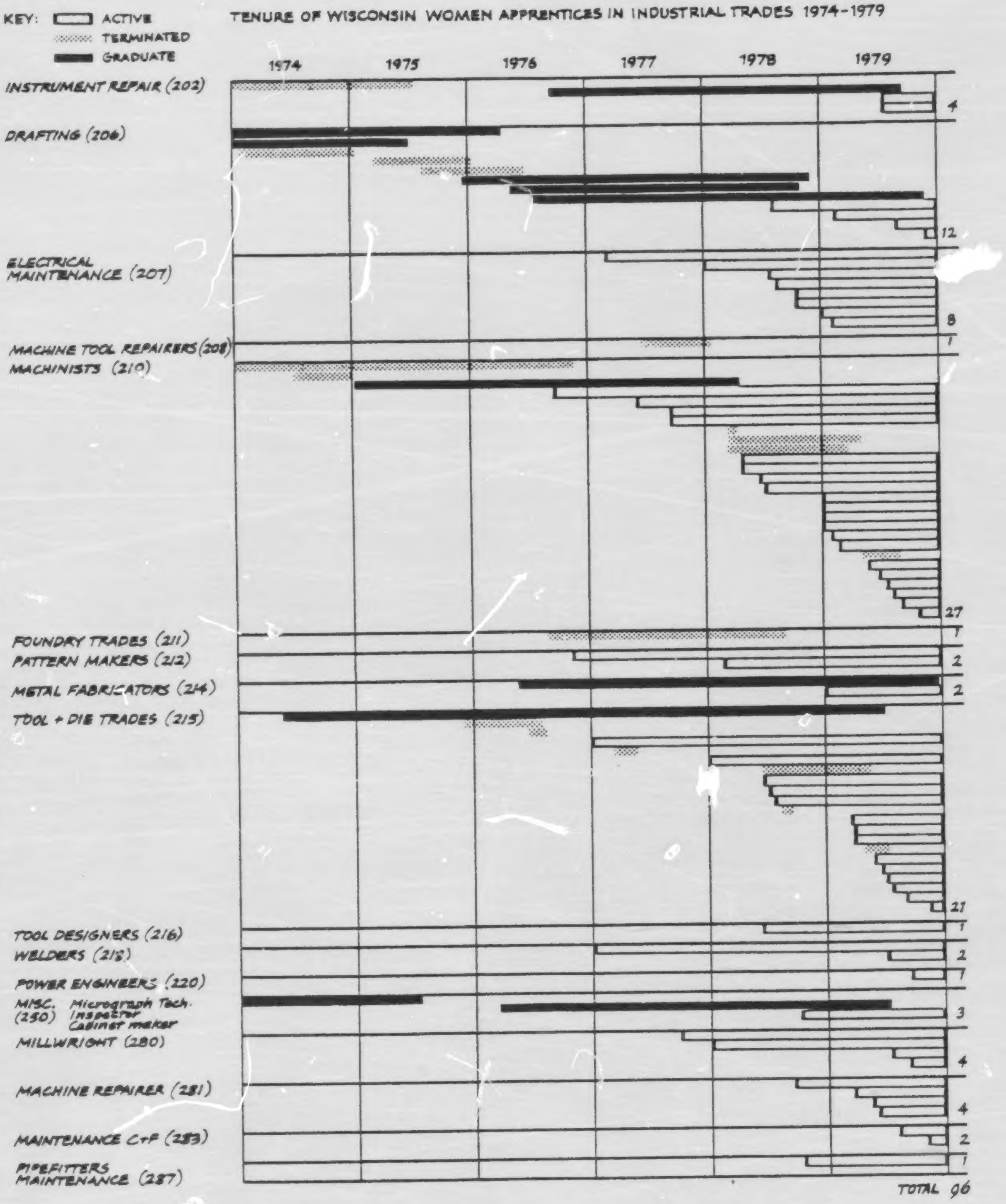
Figures 1, 2, and 3 provide, in graphic form, considerable information about the population of women in apprenticeship from 1974 through 1979. Data were provided by the Division of Apprenticeship and Training for the State of Wisconsin. By industry group and trade, the tenure of each woman who was an apprentice in a traditionally male trade in a male-intensive apprenticeship in Wisconsin from January 1, 1974, through December 31, 1979, is shown. All dates within the period are shown to the month, and graduate, terminated, and active apprentices are differentiated.

Figure 1



TENURE OF WISCONSIN WOMEN APPRENTICES IN CONSTRUCTION TRADES 1974-1979

Figure 2



TENURE OF WISCONSIN WOMEN APPRENTICES IN INDUSTRIAL TRADES 1974-1979

Figure 3

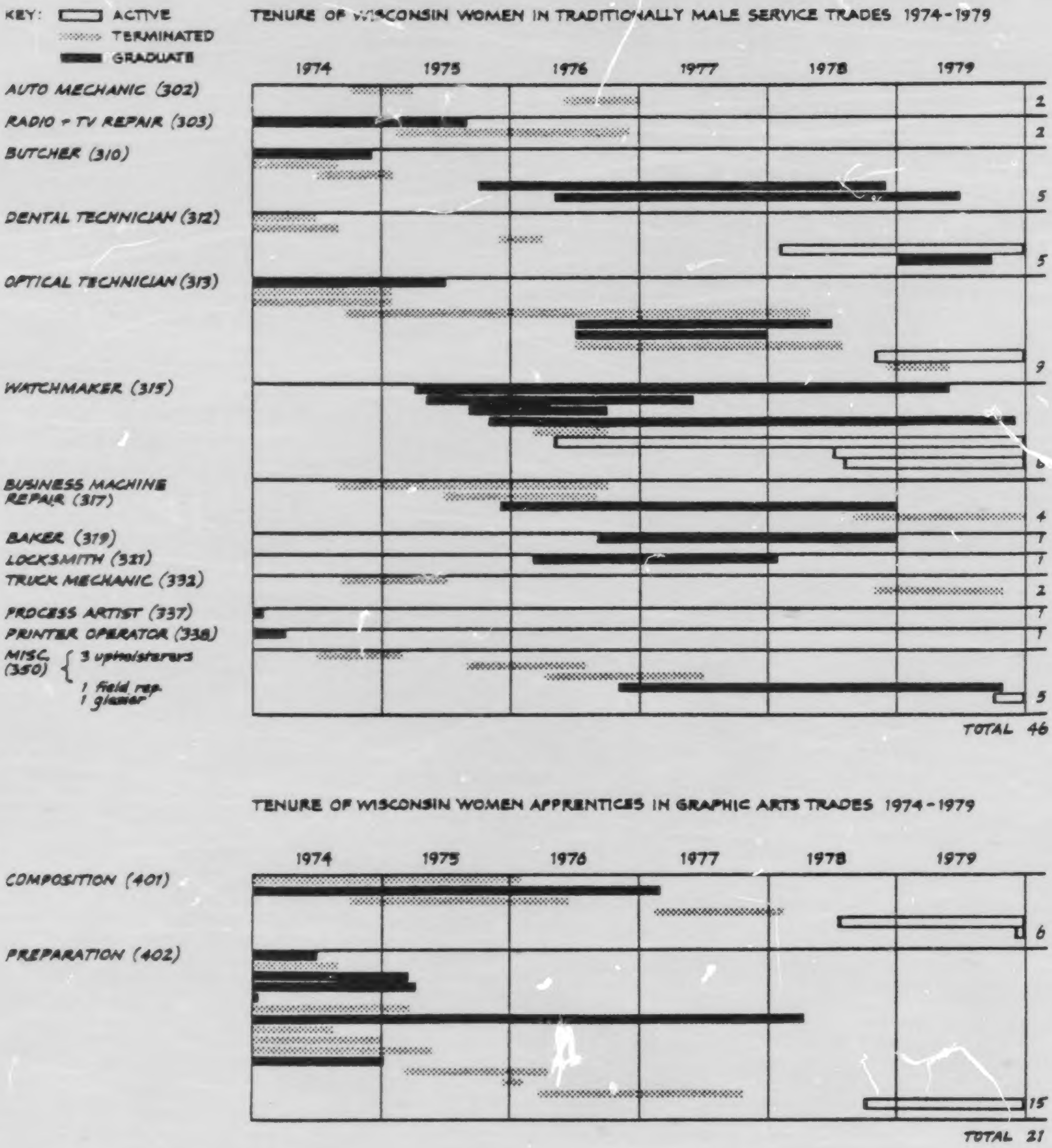

KEY: ACTIVE
TERMINATED
GRADUATE
TENURE OF WISCONSIN WOMEN IN TRADITIONALLY MALE SERVICE TRADES 1974-1979
1974
1975
1976
1977
1978
1979
AUTO MECHANIC (302)
RADIO + TV REPAIR (303)
BUTCHER (310)
DENTAL TECHNICIAN (312)
OPTICAL TECHNICIAN (313)
WATCHMAKER (315)
BUSINESS MACHINE REPAIR (317)
BAKER (319)
LOCKSMITH (321)
TRUCK MECHANIC (332)
PROCESS ARTIST (337)
PRINTER OPERATOR (338)
MISC. (350)
3 upholsterers
1 field rep.
1 glazier
2
2
5
5
9
8
4
1
1
2
1
1
5
TOTAL 46
TENURE OF WISCONSIN WOMEN APPRENTICES IN GRAPHIC ARTS TRADES 1974-1979
1974
1975
1976
1977
1978
1979
COMPOSITION (401)
PREPARATION (402)
6
15
TOTAL 21

Table 5. Reasons for Leaving or Continuing Apprenticeship, 1973

| Dropouts |  |  | Actives and Completers |  |
|---|---|---|---|---|
| # | % |  | # | % |
| 38 | 100 | Total | 121 | 100 |
| 36 | 94 | Found the work personally rewarding | 121 | 100 |
| 32 | 84.2 | Had at the outset expected to complete | 115 | 95 |
| 11 | 28.9 | Had experienced post-H.S. vocational training | 40 | 33.1 |
| 23 | 60.5 | Were married | 60 | 49.6 |
| 4 | 10.6 | Were widowed, divorced or separated | 22 | 18.2 |
| 9 | 23.7 | Were the main support of their family | 50 | 41.3 |
| 11 | 28.9 | Received no classroom related instruction | 21 | 17.4 |
| 18 | 47.4 | Knew how and whom to contact in state apprenticeship agency for help or advice | 66 | 54.5 |
| 12 | 31.6 | Did not have a skilled journeyperson working closely with them | 31 | 25.6 |
| 12 | 31.6 | Found some physical aspects of the job too difficult | 18 | 14.9 |
| 8 | 21.1 | Met with resistance from family, friends or co-workers on deciding on apprenticeship | 15 | 12.4 |
| 32 | 84.2 | Had friendly daily relations with co-workers | 118 | 97.5 |
| 9 | 23.7 | Transportation was a problem | 15 | 12.4 |
| 6 | 16 | Wages too low as apprentice and earned more in subsequent job |  |  |
| 10 | 26 | Would have continued as apprentices if someone had encouraged them |  |  |

Source: Patricia Mapp, Women in Apprenticeship, Why Not? (Washington, D.C.: U.S. Department of Labor, 1973).

Table 6. Outcome, by Sex and Industry Group, of Wisconson Apprentice Starts, 1970-1979

| | Construction | | | | Industrial | | | | Service | | | | Graphic Arts | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Active | Inactive | Graduate | Total | Active | Inactive | Graduate | Total | Active | Inactive | Graduate | Total | Active | Inactive | Graduate | Total | |
| 1970 | | | | | | | | | | | | | | | | | |
| Female..... | - | 1 | - | 1 | - | - | - | - | - | 109 | 56 | 165 | - | 1 | 1 | 2 | 168 |
| Male....... | 23 | 141 | 402 | 566 | 3 | 147 | 473 | 623 | - | 254 | 298 | 552 | - | 46 | 129 | 175 | 1,916 |
| Total...... | 23 | 142 | 402 | 567 | 3 | 147 | 473 | 623 | - | 363 | 354 | 717 | - | 47 | 130 | 177 | 2,084 |
| 1971 | | | | | | | | | | | | | | | | | |
| Female..... | - | - | - | - | - | - | - | - | - | 163 | 62 | 225 | - | 2 | 1 | 3 | 228 |
| Male....... | 10 | 155 | 456 | 621 | - | 167 | 397 | 564 | - | 314 | 403 | 717 | - | 50 | 87 | 137 | 2,039 |
| Total...... | 10 | 155 | 456 | 621 | - | 167 | 397 | 564 | - | 477 | 465 | 942 | - | 52 | 88 | 140 | 2,267 |
| 1972 | | | | | | | | | | | | | | | | | |
| Female..... | - | - | - | - | - | 2 | 2 | 4 | - | 143 | 91 | 234 | - | 4 | 2 | 6 | 244 |
| Male....... | 23 | 202 | 609 | 834 | 1 | 206 | 591 | 798 | 1 | 368 | 298 | 667 | 1 | 38 | 80 | 119 | 2,418 |
| Total...... | 23 | 202 | 609 | 834 | 1 | 208 | 593 | 802 | 1 | 511 | 389 | 901 | 1 | 42 | 82 | 125 | 2,662 |
| 1973 | | | | | | | | | | | | | | | | | |
| Female..... | - | 1 | 1 | 2 | - | 25 | 1 | 26 | - | 76 | 74 | 150 | - | 5 | 1 | 6 | 184 |
| Male....... | 54 | 275 | 824 | 1,153 | 5 | 355 | 785 | 1,145 | 2 | 284 | 347 | 633 | - | 33 | 80 | 113 | 3,044 |
| Total...... | 54 | 276 | 825 | 1,155 | 5 | 380 | 786 | 1,171 | 2 | 360 | 421 | 783 | - | 38 | 81 | 119 | 3,228 |
| 1974 | | | | | | | | | | | | | | | | | |
| Female..... | - | 1 | 3 | 4 | - | 2 | 1 | 3 | - | 82 | 44 | 126 | - | 2 | 2 | 4 | 137 |
| Male....... | 68 | 163 | 521 | 752 | 18 | 321 | 793 | 1,132 | - | 246 | 265 | 511 | 1 | 26 | 46 | 73 | 2,468 |
| Total...... | 68 | 164 | 524 | 756 | 18 | 323 | 794 | 1,135 | - | 328 | 309 | 637 | 1 | 28 | 48 | 77 | 2,605 |
| 1975 | | | | | | | | | | | | | | | | | |
| Female..... | - | 1 | - | 1 | - | 3 | 2 | 5 | 1 | 97 | 71 | 169 | - | 7 | 6 | 13 | 188 |
| Male....... | 144 | 116 | 175 | 435 | 42 | 194 | 465 | 701 | 10 | 242 | 237 | 489 | 1 | 24 | 20 | 45 | 1,670 |
| Total...... | 144 | 117 | 175 | 436 | 42 | 197 | 467 | 706 | 11 | 339 | 308 | 658 | 1 | 31 | 26 | 58 | 1,858 |
| 1976 | | | | | | | | | | | | | | | | | |
| Female..... | 3 | 1 | - | 4 | 1 | 2 | 6 | 9 | 2 | 109 | 80 | 191 | - | 10 | - | 10 | 214 |
| Male....... | 448 | 146 | 100 | 694 | 300 | 178 | 322 | 800 | 42 | 251 | 190 | 483 | 5 | 22 | 14 | 41 | 2.018 |
| Total...... | 451 | 147 | 100 | 698 | 301 | 180 | 328 | 809 | 44 | 360 | 270 | 674 | 5 | 32 | 14 | 51 | 2,232 |
| 1977 | | | | | | | | | | | | | | | | | |
| Female..... | 2 | 4 | - | 6 | 7 | 3 | - | 10 | 27 | 88 | 47 | 162 | - | 5 | - | 5 | 183 |
| Male....... | 963 | 230 | 29 | 1,222 | 618 | 195 | 141 | 954 | 119 | 162 | 61 | 342 | 9 | 9 | 6 | 24 | 2,542 |
| Total...... | 965 | 234 | 29 | 1,228 | 625 | 198 | 141 | 964 | 146 | 250 | 108 | 504 | 9 | 14 | 6 | 29 | 2,725 |
| 1978 | | | | | | | | | | | | | | | | | |
| Female..... | 20 | 10 | - | 30 | 21 | 5 | - | 26 | 85 | 93 | 37 | 215 | 2 | 1 | - | 3 | 274 |
| Male....... | 1,149 | 206 | 18 | 1,373 | 897 | 164 | 29 | 1,090 | 198 | 132 | 29 | 359 | 16 | 7 | 1 | 24 | 2,846 |
| Total...... | 1,169 | 216 | 18 | 1,403 | 918 | 169 | 29 | 1,116 | 283 | 225 | 66 | 574 | 18 | 8 | 1 | 27 | 3,120 |
| 1979 | | | | | | | | | | | | | | | | | |
| Female..... | 43 | 9 | - | 52 | 34 | 5 | - | 39 | 162 | 54 | 10 | 226 | 1 | - | - | 1 | 318 |
| Male....... | 1,100 | 66 | 6 | 1,172 | 1,069 | 96 | 14 | 1,179 | 308 | 77 | 4 | 389 | 9 | 1 | 1 | 11 | 2,751 |
| Total...... | 1,143 | 75 | 6 | 1,224 | 1,103 | 101 | 14 | 1,218 | 470 | 131 | 14 | 615 | 10 | 1 | 1 | 12 | 3,069 |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.
Inactive=terminated.

Examination of these women by industry group (table 7) shows that the two groups with very small numbers of active apprentices had graduation rates of 37.8 (service trades) and 33.3 percent (graphic arts trades); it is too early to predict what proportion of the large numbers of active women apprentices in the construction and industrial trades will graduate.

Minority women constitute 11.5 percent of the 262 women who started apprenticeships in traditionally male skilled trades from 1974 through 1979. Table 8 shows the numbers of Caucasian and minority members of the selected population, by status.

Minority women are somewhat underrepresented in the graphic arts and service trades, and constitute 14 percent and 12.5 percent of female apprentices in the construction and industrial trades respectively. The fact that almost no minority women have graduated and that a high proportion (73 percent) are currently active apprentices indicates that the entry of minority women into traditionally male trades in Wisconsin is a very recent phenomenon.

## The 1980 Women in Apprenticeship Project

### Study Design

This project is in the initial phase at the time of this writing. Research started with a few initial, in-depth, open-ended interviews with apprentice coordinators, Joint Apprenticeship Committee members, apprentices, drop-outs, instructors of related training, supervisors, and co-workers to explore and review all possible relevant factors in the job and training situation.

Using the records of the Wisconsin Division of Apprenticeship and Training, last known addresses were used to send a letter explaining the project and soliciting the participation of the 262 subjects. Mail-back postcards were included so that subjects could indicate the times of day they might be reached by phone. The responses of all those in the study population who can be reached by mutual agreement (mail-back cards), through telephone information services, or with assistance from employers or the State Division of Apprenticeship and Training will be tabulated and analyzed.

The telephone interviewing technique was selected as the most effective way to carry out this study for several reasons. When the study was conceived in the spring of 1979, Division of Apprenticeship and Training figures indicated there were approximately one hundred women who had been enrolled in the trades that would be looked at in this study. By spring of 1980, that number had swollen to 262, Table 7. 1974-1979 Wisconsin Female Starts in Traditionally Male Trades, by Status and Industry Group, January 1980

| Industry Group | Active | Terminated | Graduated | Termination rate | Total |
|---|---|---|---|---|---|
| Construction | 72 | 24 | 3 | 24.24% | 99 |
| Industrial | 67 | 18 | 11 | 18.75% | 96 |
| Service | 7 | 21 | 18 | 45.65% | 46 |
| Graphic Arts | 3 | 11 | 7 | 33.33% | 21 |
| Total | 149 | 74 | 39 | | 262 |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.

Table 8. Women Apprentices in Wisconsin Who Started In Traditionally Male Trades 1974-1979, by Status, Race, and Industry Group

| Industry | Status |  |  |  |  |  | Subtotal |  | Total |
|---|---|---|---|---|---|---|---|---|---|
|  | Active |  | Terminated |  | Graduated |  |  |  |  |
|  | C* | M* | C* | M* | C* | M* | C* | M* |  |
| Construction | 62 | 10 | 20 | 4 | 3 | 0 | 85 | 14 | 99 |
| Industrial | 56 | 11 | 17 | 1 | 11 | 0 | 84 | 12 | 96 |
| Service | 7 | 0 | 19 | 2 | 17 | 1 | 43 | 2 | 46 |
| Graphic Arts | 2 | 1 | 11 | 0 | 7 | 0 | 20 | 1 | 21 |
| Subtotals | 127 | 22 | 67 | 7 | 38 | 1 | 232 | 30 | 262 |
| Totals | 149 |  | 74 |  | 39 |  | 262 |  | 262 |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.

* C=Caucasian; M=Minority

increasing the sample size to an unmanageable number if personal interviews were to be conducted as originally planned.

Another factor that made telephone interviews more desirable was the untimely advent of the energy crisis. Though many of the apprentices are located in the urban centers of Milwaukee and Madison, most are scattered about the state. Within project budgets and with the additional number of subjects, personal interviews would have been prohibitively expensive.

The final factor that led to the telephone interview as the technique of choice was the existence of the University of Wisconsin Survey Research Laboratory in the city of Madison. Questionnaires were, therefore, designed to be administered by professional interviewers at the Survey Research Laboratory. These interviewers were briefed on the apprenticeship system, the goals of the project, and the known attributes of the respondents to whom they would be talking.

Twelve telephone attempts will be made to reach each respondent before she or he will be considered unreachable. Referrals from people with the same last name will be sought for respondents with small city or town addresses in an attempt to locate them.

It is anticipated that there will be difficulties reaching some of the subjects, especially among those who have terminated their apprenticeships and moved on to other occupations and perhaps new locations. With an average age of 25.5, these women are in the age group most likely to have unlisted telephone numbers. However, every effort will be made to reach as many of them as possible, and it is hoped that a minimum of 70 percent can be reached.

Pretests indicate that the interviews run approximately 40 minutes with the apprentices and about half that with the co-workers and supervisors. Marginal notes are being kept by the interviewers and both the questionnaires and code book will be made available to the project.

During the course of each interview, the apprentices are asked for the name of a co-worker or supervisor they think might be willing to be interviewed. Those referrals constitute the survey sample for the second wave survey. This "snowballing" technique will provide data from male observer-participants in the woman apprentices' experience.

Not all apprentices are able to provide such referrals. The nature of construction work, for example, is such that apprentices may have no opportunity for establishing working relationships close enough to get past nicknames. Also, some apprentices are not willing to submit names of co-workers or supervisors if they have had experiences sufficiently unsatisfactory to cause them to terminate their apprenticeships. It is hoped that at least half of the apprentices reached will provide names of co-workers or supervisors. If that goal is not achieved, additional names will be sought through the employers on file with the Division of Apprenticeship and Training of the State of Wisconsin.

Additional follow-up calls will be made for further in-depth information from respondents who have indicated in responding to the questionnaire that they are willing to receive them and whose experiences seem worth documenting in detail.

## Questionnaire Design

The questionnaire for apprentices is designed to elicit information about: the apprentice's experiences before beginning apprenticeship training; experience on the job and in related instruction classes; attitudes toward the apprenticeship experience; reasons for termination, graduation, and/or plans for continuation. It also seeks to elicit a referral to a co-worker or supervisor.

The questionnaire for co-workers and supervisors is designed to elicit information about some of the same things, but questions vary according to the number of years worked in the trade and the status (journeyman, fellow-apprentice, or supervisor) of the respondent. Younger co-workers will be asked about their experiences prior to beginning apprenticeship training, their experiences as apprentices on the job and in related instruction classes, and their attitudes toward apprenticeship training. Older co-workers will be asked to assess apprentices' performance today as compared to when they were in training themselves. Supervisors will be asked about their attitudes toward women in apprenticeship from a supervisor's point of view.

All respondents will be asked the same questions about conditions on the job (needed skills, difficulties, attitudes of the men on the job, hazing, harassment, differences between the ways in which male and female apprentices are treated, attitudes toward women in the trades) that were asked the woman apprentice who worked with them. Their answers will be based on their experience of having worked with a woman apprentice.

## Data Analysis

Because of the extensive number of cells into which the data may be organized--women apprentices (active, graduated, terminated), co-workers (more than ten years in the trade, less than ten years), supervisors, co-orientational pairs (apprentice/supervisor, apprentice/co-worker), trade group (construction, industrial, service, graphic arts), trade (bricklayer, carpenter, steamfitter, drafter, pattern maker, tool and die maker, butcher, locksmith, watchmaker, compositor, to name but a few)--and with a maximum number of only 262, it is uncertain which modes of analysis will be most appropriate at this point in the project. It is anticipated that those factors that inhibit or foster success and acceptance of these women will emerge as the data are grouped and analyzed, and that there will be some factors that will emerge across the many cells that this study focuses on.

## Preliminary Findings

This second Women in Apprenticeship project is expected to be completed by 1981. Some preliminary demographic analyses as of mid-1980 are contained in table 9. It shows the average age of the women who entered male-intensive apprenticeships in traditionally male skilled trades by Wisconsin industry group from 1974 through 1979 at the time they started their apprenticeships. It also shows that in all but the construction trades the women who completed apprenticeship training were the ones who were most mature at the time of apprenticeship start.

At what point in training do women in traditionally male trades drop out? Of the 74 women who terminated before graduation, 74.3 percent (55) dropped out within the first 14 months of their apprenticeship, and 86.5 percent (74) within the first 24 months. Clearly, the longer a woman survives as an apprentice, the greater her chances of graduating.

## Hypotheses

Most of the projected findings for this project are still in the form of hypotheses waiting to be proved or disproved by the data collected. These hypotheses are that women are more likely to succeed in apprenticeship training for traditionally male skilled blue-collar trades if:

1. they have worked in a semi-skilled or unskilled traditionally male blue-collar job before they began their apprenticeship;
2. they are personally familiar with blue-collar mores through friends or family;
3. they had realistic expectations about what it would be like to work in the trade of their choice;

Table 9. Average Age of Women at the Time of Start in Selected Apprenticeships, by Status within Industry Groups

| Industry Group | Active | Terminated | Graduated | Mean age Total number |
|---|---|---|---|---|
| Construction | 25.7 | 25.66 | 23.03 | 25.6 |
| (n) | 71 | 16 | 3 | 94 |
| Industrial | 26.9 | 24.85 | 27.6 | 26.6 |
| (n) | 65 | 18 | 10 | 95 |
| Service | 24.9 | 23.6 | 25.7 | 24.5 |
| (n) | 9 | 21 | 15 | 45 |
| Graphic Arts | 22.6 | 23.93 | 27.9 | 25.3 |
| (n) | 2 | 11 | 8 | 21 |

Source: Information provided by the Division of Apprenticeship and Training, State of Wisconsin.

4. they were a participant in a preapprenticeship program or were closely guided by an informal, knowledgeable support system;

5. they had had an opportunity to learn to use the tools and practice the skills of the trade before they began their apprenticeship;

6. they have a sense of humor and are slow to take offense;

7. their on-the-job supervisors are not antagonistic to the introduction of women to the trade;

8. they are not the only women in a traditionally male trade at the worksite;

9. the presence of women at the worksite is considered inevitable by the men on the job;

10. their co-workers are friendly and helpful rather than defensive and hostile;

11. they are not subjected to stressful hazing or harassment;

12. they are satisfied with the availability and quality of related instruction;

13. they genuinely enjoy the work of their trade and the feeling of competence it gives them to perform it satisfactorily.

Whatever the findings with regard to these hypotheses, correlations leading to valid generalizations from this study should be of great value to CETA-funded outreach projects and to the beginning efforts being made through the Work Incentive Program to place women in better paying blue-collar jobs. The findings of this research project should also be of use in improving effectiveness of affirmative action programs set up by private and public employers, in which efforts are being made to employ women in trades that have in the past been filled entirely by men. Lastly, the findings of this modest research effort should lay some of the groundwork for general hypotheses to be tested in future longitudinal studies and in more extensive research efforts aimed at definitively isolating and analyzing the social factors that work to extend and continue occupational segregation by sex throughout this society as a whole in blue- , pink- , and white-collar job areas, and at all job levels.

## Notes

1. Herbert Meyer and Mary Lee, The Integration of Females into Male-Oriented Jobs: Experiences of Certain Public Utility Companies (Contract No. 21-12-75-18) (Employment and Training Administration, 1976).

2. In 1971, there was only one demonstration project to prepare and place women in preapprenticeship, apprenticeship, and traditionally male blue-collar job openings. In 1978, there were more than 80 such projects.

3. Norma Briggs, Women and the Skilled Trades (Columbus, Ohio: Educational Resources Information Center, 1979), pp. 3 and 8.

4. Thomas A. Barocci, The Drop Out and the Wisconsin Apprenticeship Program: A Descriptive and Econometric Analysis (Madison: Industrial Relations Research Institute, University of Wisconsin, 1972), pp. 94-95.

5. These are: lithographic stripper, lithographic camerman, florist, watchmaker, architectural draftsman, printer, and baker.

6. Patricia Mapp, Women in Apprenticeship, Why Not? U.S. Department of Labor Monograph No. 33 (Washington, D.C.: U. S. Department of Labor, 1973).

7. For internal purposes, the Wisconsin Division of Apprenticeship and Training does not follow the State and National Apprenticeship System (SNAPS) of occupational classification. It divides trades into four major categories--construction, industrial, service, and graphic arts--and so relegates fewer trades than SNAPS to a miscellaneous category.

8. Defined for project purposes as a trade more than 75 percent male.

9. These are: public health aide, manager, day care teacher, homemaker, home health aide, police detective, cosmetologist, central office repairwoman, draftswoman, radio-TV mechanic, barber, layout stripper, lithographic stripper, printer operator, process artist, rubber engraver, weekly newsprinter, pharmacy technician, medical records technician, surface technician, second class engineer, cook, health care facilities cook, silk screen cutter, nursing assistant, meat cutter.

10. Mapp, Women in Apprenticeship.

# RECENT EFFORTS TO INCREASE FEMALE PARTICIPATION IN APPRENTICESHIP IN THE BASIC STEEL INDUSTRY IN THE MIDWEST

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## Introduction

American women have had, and continue to have, few craft jobs. In 1974, only 4 percent of all craft workers were women. By 1978, women comprised 5.6 percent of craft workers. Within trades, women are numerically concentrated in a few occupations such as beautician and baker. No more than 2 percent of carpenters, electricians, mechanics, pipefitters, or tool and die makers were women in 1978.

Matters have not changed much in recent years, despite various equal employment and affirmative action programs. In June 1978 women constituted only 2.6 percent of all apprentices. In construction crafts, where programs to combat racial discrimination have been active for a decade or longer, women held only 1.9 percent of apprentice openings at the close of 1978.

Academic concern about the paucity of women in apprenticeable occupations is a remarkably recent phenomenon. A 1976 text by three leading employment and training scholars devotes two full pages of a chapter on apprenticeship to decrying the small number of blacks in apprenticeships and to racial discrmination. However, there is no reference at all to the small number of women in apprenticeable occupations. The authors' inattention to the lack of women is most evident in their statement that "...the traditional father-son relationship in many skilled crafts is weakening because it discriminated against minorities and because many craftsmen with higher incomes send their sons to college."

The purpose of the above remarks is to put the midwest steel industry situation concerning females in apprenticeable occupations in context. In the economy in general, women have had a small share of apprenticeable jobs. This situation has not been a cause of concern, at least until recently, among either policymakers or students of the labor market and employment. Indeed, it is possible that the small representation of women in most craft occupations is due to factors other than sex discrimination, such as women's vocational preferences. However, this is an empirical question.

This study reports on the effort to increase female participation in craft occupations and apprenticeship in the basic steel industry in the midwest. A nationwide effort to increase female employment was included among the provisions of a 1974 consent decree negotiated with most major steel producers, the United Steelworkers of America, and various federal agencies. As described later, one of the two companies involved in this research is a signatory to that decree. The other is a party to a conciliation agreement containing similar affirmative action provisions.

The importance of the present study is that it may cast some light on the ability of public policy to alter the present situation. How effective can public policy be in changing the traditional pattern of employment in occupations that historically have been virtually exclusive male domains? Given encouragement and public policy backing, will women embrace opportunities to work in craft occupations, or will they continue to shun these traditionally male jobs?

## Scope of the Study

This report is based on information from two large integrated steel mills. In 1978, the two mills employed about 32,500 workers, which is 48 percent of the 68,000 steel mill workers in the study area. They employed 3,548 women, which is 52 percent of the 6,800 women employed in steel mills in the area. Thus, approximately one-half of both total and female area steel mill workers are employed in the two study mills.

The proportion of females in the sample plants, shown in table 1, is approximately the same as that in steel mills in the study area generally, and is well above the 6 percent proportion of women in steel mills nationally.

The two mills included in the study produce roughly 10 percent of total domestic production. Both are profitable, relatively modern plants, and both have experienced stable to rising employment in the past five years. Thus, they are representative of the healthiest segment of the domestic steel industry.

Male and female employment in the two mills in production and maintenance jobs is shown in table 2. Note that female production and maintenance employment has increased steadily during the years between 1976 and 1979.

Table 1. Total, Male, and Female Employment in Two Selected Midwest Steel Mills, 1976-79

| | Total | Male | | Female | |
|---|---|---|---|---|---|
| | | # | % | # | % |
| 1976 | 30,389 | 27,901 | 91.8 | 2488 | 8.2 |
| 1977 | 31,444 | 28,527 | 90.7 | 2917 | 9.3 |
| 1978 | 32,478 | 28,930 | 89.1 | 3548 | 10.9 |
| 1979 | 34,097 | 29,929 | 87.8 | 4168 | 12.2 |

Table 2. Total, Male, and Female Employment in Production and Maintenance Positions in Two Selected Midwest Steel Mills, 1976-79

| | Total | Male | | Female | |
|---|---|---|---|---|---|
| | | # | % | # | % |
| 1976 | 22,100 | 21,337 | 96.6 | 763 | 3.5 |
| 1977 | 22,843 | 21,796 | 95.4 | 1047 | 4.6 |
| 1978 | 23,603 | 22,084 | 93.6 | 1519 | 6.4 |
| 1979 | 24,912 | 22,974 | 92.2 | 1938 | 7.8 |

## Craft Occupations in the Basic Steel Industry

In 1978, 12,386,000 or 13 percent of the 94,373,000 employed persons in the United States were in craft occupations. Although craft occupations are often thought of as being concentrated in the construction industry, there are more craft workers in manufacturing than in any other industry group. In 1978, 4,144,000 (19.3 percent) of the 21,497,000 workers in manufacturing were in craft occupations. In durable manufacturing, 21.2 percent of all workers were in crafts.

Craft workers have an even more significant role in basic steel manufacturing than in durable manufacturing generally. In 1979, 26.6 percent of the work force in the two steel mills included in this study were in craft occupations. Of production and maintenance workers in these mills, 34.9 percent were craft workers. The relative importance of craft workers has increased steadily during the past two or three decades, due to advancing technology in the steel industry. This trend will no doubt continue.

Male and female craft employment in the sample mills is shown in table 3. The craft workers were distributed over 21 occupations. The numerically most important occupations, comprising over half of all craft workers, are mechanics, millwrights, and motor inspectors. At the other end of the scale, quantitatively, are pattern makers, instrument repair workers, and scale repair workers. Neither mill had more than ten workers in any of these latter occupations.

## Affirmative Action in the Basic Steel Industry

Though seemingly a recent phenomenon, affirmative action legislation dates back to 1941 and the Roosevelt administration. At that time, an executive order was issued prohibiting employment discrimination by defense contractors. Throughout the 1940s and 1950s, State Fair Employment Laws and presidential executive orders were also passed to promote equality in employment. The passage of the Civil Rights Act of 1964 and subsequent amendments prohibited discrimination on the basis of race, color, sex, religion, or national origin in various employment settings.

Executive Order 11246, signed by President Johnson on September 24, 1965, prohibited discrimination on the basis of race, creed, color, and national origin. On October 13, 1967, President Johnson signed Executive Order 11375 which added sex to the basis of prohibited discrimination. Order No. 4 issued by the U.S. Department of Labor in January 1970 required that federal contractors take affirmative action with respect to minorities only. It was not until December 4, 1971, that Revised Order No. 4 was issued by the secretary of labor, in which

Table 3. Total Male and Female Craft Employment in Two Selected Midwest Steel Mills, 1976-79

| | | Male | | Female | |
|---|---|---|---|---|---|
| | Total | # | % | # | % |
| 1976 | 7332 | 7305 | 99.6 | 27 | 0.4 |
| 1977 | 7826 | 7760 | 99.2 | 66 | 0.8 |
| 1978 | 8170 | 8016 | 98.3 | 154 | 1.7 |
| 1979 | 8780 | 8583 | 97.8 | 197 | 2.2 |

Note: Company A 1979 data are for December 31. All other data are for June 30 of each year.

affirmative action with respect to women was first required of federal contractors.

It is important to note with regard to these mandates that it is the consequences of disparate representation that are targeted. In other words, the government does not have to prove intent on the part of the organization, but simply has to demonstrate that disproportionate representation of certain classes does indeed exist. Unless it can be shown that such disproportionate representation is a "business necessity," unlawful discrimination is said to exist.

Consent decrees have been one widely adopted means of correcting such disproportionate representation. A consent decree is a legally binding agreement between various agencies of the U.S. government and the institutions involved, often resulting from threatened litigation but in lieu of a final court proceeding.

On April 12, 1974, the steel industry consent decree was signed by nine major steel companies and the United Steelworkers of America. This agreement covers more than 340,000 workers in 250 plants. In addition to back pay, the consent decree resulted in complex and major revisions in the seniority system of virtually the entire industry.

With particular reference to trade and craft occupations, the steel industry consent decree required management to analyze each craft job in terms of its minority and female representation and, where appropriate, to establish goals for minority groups and for females. An implementing ratio of 50 percent was established for transfer into the crafts and associated apprenticeships, to be maintained until the stipulated goals were achieved. In other words, 50 percent of all new transfers into the craft occupations are to be either minority or female group members.

Seniority policies were altered to facilitate these goals. First, seniority factors were applied separately to each group for whom timetables are established. Second, rules of seniority were changed so that a person no longer loses seniority when switching from one department to another. Thus, craft positions must be bid for on a plant-wide basis, rather than being restricted to a single unit. Outside applicants are considered only when there are no qualified bidders within the plant.

One of the companies participating in this survey withdrew from consent decree negotiations on the basis that it had not discriminatorily hired or placed. This company, however, did subsequently sign two conciliation agreements with the U.S. Equal Employment Opportunity Commission (EEOC) following four years of negotiations. One of these agreements is not fully operative due to collective bargaining agreement restrictions on accelerated craft placement for women and minorities. Provisions that would revise pertinent seniority limitations are awaiting United Steelworkers Union signature.

## Craft Training in the Study Steel Mills

To be certified at the different levels in a craft, workers must pass a set of work tests illustrative of tasks associated with the occupation. There are three levels of journeymen in each craft. Generally, workers who meet certain requirements and pass a set of criteria in testing (e.g., at least five of nine tests) are certified at the bottom level. Passing another set of criteria earns middle-level rating, whereas the top level is awarded those passing all required tests. A journeyman may take the additional tests needed to move to a higher grade about every six months until the tests are passed if he or she desires to do so. The pay increment between each journeyman grade is about 2 percent of base pay.

### Entry Routes into the Crafts

Within the steel industry there have previously been no standard industry-wide training programs. Thus, both occupational content and apprenticeship content vary among firms. One consequence of this variation is to restrict the mobility of craft workers among firms.

Under the 1968 Basic Steel Collective Bargaining Agreement, the industry and the United Steelworkers of America agreed to embark on a program to standardize industry apprentice programs. As new apprentice training programs for each craft are developed, they will replace existing apprentice programs. As of May 1979, two programs, the 8,320 hour machinist apprenticeship and the 7,280 hour millwright program, had been released.

Routes into the crafts in the two mills studied were similar in some respects and different in others. In both mills, the collective bargaining agreement required posting of all job openings. Workers may bid on each opening and the most senior qualified worker bidding is awarded the position. In 1979, an average of six bids were received for each craft opening in Company A. Thus, entry into the crafts from within both plants is strongly affected by length of service. In both plants, applicants from outside may be brought directly into craft openings only if there are not enough qualified bidders within the plant to fill the openings.

The means of acquiring the journeyman's credential vary across crafts and between firms. Four different methods were used in the two mills.

Company A has active apprentice programs in eighteen of the twenty-one crafts. One other occupation has an inactive apprentice program and there is no apprentice program in the remaining occupations. The other plant currently has only one active apprentice program.

The helper-handyman route is an alternative to apprenticeships in several occupations in Company A, although there is a preference on the part of the company toward formal apprentice programs. In late 1979 this mill had some handymen or helpers in six of the twenty-one crafts.

Most of these helper-handymen were in the millwright occupation, which is being replaced by the mill mechanic with its vocational mechanic formalized apprenticeship program. The mechanic concept broadens and standardizes the duties, responsibilities, and training of the former millwright occupation and has replaced the millwright and the millwright helper in many production departments.

Company B does not use the helper-handyman route to craft worker status. Rather, graduates of two-year technical schools are hired as probationary craft workers. Such probationary workers must reach the bottom level of craftsmen within 520 hours on the job. This training is a combination of classroom and technical training taken prior to employment.

Company B also uses another method for training journeymen in two craft occupations. The company training school (hereafter referred to as training school) combines related classroom instruction, as in apprenticeship, with vestibule training in the various job skills associated with the craft for which the candidates are training. The training school will be discussed in more detail in a following section.

## Training in Selected Crafts

Three crafts have been chosen for close study to examine the role of women in craft occupations in the two firms. Two of the selected crafts, motor inspector and millwright-vocational mechanic, were chosen because there are many workers in each craft in each of the study plants and because they are the trades for which the unique training school provides training. The third craft, machinist, was selected because it is the only trade for which both mills currently have active apprentice programs.

Motor inspectors are responsible for keeping all mill electrical equipment in top operating condition. Motor inspectors inspect, repair, replace, install, adjust, and maintain all types of electrical equipment. Typical tasks include making conduit and wiring installations, maintaining batteries on mobile equipment, troubleshooting crane control panels, motors, and electronic components using the tools of the trade as well as blueprints and schematic diagrams.

Millwrights are responsible for keeping all mill mechanical equipment in top operating condition. Millwrights inspect, repair, replace, install, adjust, and maintain all types of mechanical equipment. Typical tasks include replacing rolls on rolling mills, cleaning and repairing lubrication devices, and assembling and aligning gears, bearings, and shafts. The job definition for vocational mechanic is similar to that for millwright. The mechanics are responsible for keeping all mill mechanical equipment in top operating condition to meet production requirements at any level of operation. They are responsible for inspecting, repairing, replacing, rebuilding, installing, adjusting, and troubleshooting equipment, using the tools of the trade as well as blueprints, sketches, and schematic diagrams. The mechanic works on mill machinery, overhead cranes, hydraulic systems, and lubrication systems. Mechanics also learn about the mill's equipment, its spare parts, lubrication, piping systems, lower transmission, mechanical drives, gearing, clutches, bearings, couplings, and hydraulics and pneumatics. They learn to use various tools of the trade including oxygen-acetylene cutting equipment.

Machinists (shop) use prints and instructions to lay out, prepare for machining, and machine parts to precision tolerances, specified finishes, and required fit. Typical tasks include operation of lathes, drill presses, planers, milling machines, boring mills, and tool grinders. Work also involves learning to lay out, make templates, jogs, and tools, and make sketches of parts.

## Training Motor Inspectors

Company A currently trains motor inspectors only through apprenticeship. The apprentice program, which was begun in 1973, consists of three and one-half years of on-the-job training coupled with a two-year related education program conducted by a local university.

Company B obtains motor inspectors by testing persons with previous technical school training and through the training school.

The training school began training motor inspectors in January 1976. The school was developed in order to provide a source of craft-trained minorities and women, after experience showed that insufficient minorities and women were available within the plant to meet the terms of the consent decree concerning craft workers.

The staff of the training school are employees of Company B, and maintain their identities with their plant departments. They are paid by their respective departments, are eligible for promotion and transfer therein, and are able to return to the same.

The original concept was to develop a training center for persons not employed by Company B. However, negotiations with the United Steelworkers of America resulted in a school that accepted 50 students in each class, 25 plant employees and 25 students referred under a Comprehensive Employment and Training Act (CETA) program. The former were generally paid at Job Class 2 for their 51-week course, whereas the latter received the minimum wage from funds provided by the Office of Manpower Development of the state CETA agency.

All students must have a high school diploma or its equivalent and must have passed courses in high school algebra and a science. The plant students are chosen by bid based on plant length of service. The CETA applicants are screened and tested by the State Employment Service Division and referred to the training school.

The laboratory areas within the training school are equipped with appropriate test and demonstration equipment, including various pieces of actual mill equipment. The laboratory duplicates, insofar as possible, actual diagnostic and repair work of the type done in the mill. Students devote roughly one-half of each day to classroom study and one-half to laboratory work.

The program includes four 12-week quarters. Between each quarter there is a one-week break during which the CETA students are taken to the plant daily to observe steel mill work in the areas they are studying. Plant employees are encouraged to take vacations during these periods.

Graduating employee-students are assured of employment either in the craft position for which they have trained or the positions they left should no craft positions be available at the time. CETA students have no such guarantees, but are considered for employment when vacancies exist. In fact, almost all employee-graduates and CETA graduates have been placed in jobs in the craft for which they trained.

As of fall 1978, the training school had graduated 145 motor inspectors, including 67 CETA referrals and 78 company employees. The motor inspector program has been discontinued due to lack of plant demand for additional motor inspectors.

## Training Millwright-Vocational Mechanics

Company A trains millwrights only through the helper-handyman route. Progression from handyman-maintenance helper to journeyman millwright status is dependent on business conditions or job openings. The training is strictly of the on-the-job variety, but many of the helpers do attend vocational mechanic schools to keep up with the formal mechanic's apprentice program. Because the training is received in a specific mill environment, the mobility of the helper and even of the millwright is somewhat restricted even under liberal transfer procedures. This training is contrasted with that of the vocational mechanic apprenticeship program. This program consists of three and one-half years of on-the-job training coupled with a three-year related instruction program conducted by the local school system. The training is designed to create a journeyman with a wide background of mechanical skills allowing the individual to perform the mechanical operations of virtually any production mill.

Company B obtains millwrights by testing persons with previous technical school training, and through the training school. From 1977 through 1979, 107 millwrights were obtained through the first method.

The discussion of the training school program for motor inspector applies to the millwright program as well. The nature, length, and size of the programs are comparable. As of fall 1979, the training school had graduated 203 millwrights, including 91 CETA referrals and 112 company employees. At the present time, only company employees are being trained at the training school because of reduced need for additional millwrights and a sufficient number of interested employees to fill all class openings.

### Training Machinists

Company A currently trains shop machinists only through apprenticeship. The shop machinist apprentice program, established in 1937, consists of four years of on-the-job training coupled to a four-year related education program conducted by a local school system.

Company B trains machinists only through an apprenticeship program, in which there were 28 apprentices in late 1979. The program is similar to that at Company A, in that it consists of four years of on-the-job training coupled to three and one-half years of related instruction.

## How Women Fare Using Various Craft Entry Routes

Tables 4 through 6 show the sex composition of workers in the motor inspector, millwright-vocational mechanic, and machinist crafts in companies A and B. Note that there are substantial differences in the number of females among crafts and between firms. These differences are closely associated with variation in entry routes into the different crafts in the two firms and with the timing of the initiation of specific programs to increase the number of female craft workers.

Table 4. Motor Inspector Employment in Two Selected Midwest Steel Mills, 1976-79

| Year | Male | | | Female | | |
|---|---|---|---|---|---|---|
| | Company A | | Company B | Company A | | Company B |
| | Journey | Apprentices | (All Journey) | Journey | Apprentices | (All Journey) |
| 1976 | 549 | 237 | 270 | 0 | 2 | 0 |
| 1977 | 567 | 231 | 280 | 0 | 4 | 16 |
| 1978 | 589 | 220 | 328 | 0 | 7 | 39 |
| 1979 | 610 | 275 | 326 | 0 | 16 | 46 |

Note: Company A 1979 data are for December 31. All other data are for June 30 of each year.

Table 5. Millwright-Vocational Mechanic Employment in Two Selected Midwest Steel Mills, 1976-79

| Year | Male | | | Female | | |
|---|---|---|---|---|---|---|
| | Company A | | Company B | Company A | | Company B |
| | Journey | Helpers & Apprentices | (All journey)[a] | Journey | Helpers & Apprentices | (All journey) |
| 1976 | 1327 | 799 | 589 | 2 | 2 | 0 |
| 1977 | 1399 | 744 | 831 | 1 | 6 | 13 |
| 1978 | 1429 | 833 | 958 | 2 | 29 | 35 |
| 1979 | 1534 | 838 | 982 | 1 | 38 | 60 |

Note: Company A 1979 data are for December 31. All other data are for June 30 of each year.

a. A few probationary millwrights are included. These earn the same pay (job class 12) as bottom-level journeymen.

Table 6. Machinist Employment in Two Selected Midwest Steel Mills, 1976-79

| Year | Male | | | | Female | | | |
|---|---|---|---|---|---|---|---|---|
| | Company A | | Company B | | Company A | | Company B | |
| | Journey | Apprentices | Journey | Apprentices | Journey | Apprentices | Journey | Apprentices |
| 1976 | 245 | 81 | 50 | 31 | 0 | 0 | 0 | 1 |
| 1977 | 257 | 78 | 60 | 20 | 0 | 0 | 0 | 1 |
| 1978 | 261 | 78 | 68 | 9 | 0 | 1 | 0 | 1 |
| 1979 | 281 | 68 | 64 | 25 | 0 | 1 | 1 | 4 |

Note: Company A 1979 data are for December 31. All other data are for June 30 of each year.

Company A has had, and continues to experience, difficulty in getting sufficient numbers of women to bid for craft openings despite specific efforts to promote such bidding. When bidding has occurred for apprenticeships where there is high employee interest, women in many cases have lacked the necessary seniority to qualify. Company A includes a discussion of craft opportunities in its day-long new employee orientation. In addition, all new female and minority employees are invited to attend a craft opportunity discussion within the first few months of employment. In this program, the nature of craft work is explained by Company A staff. Since the inception of the program in January 1978, 133 women have participated in this program.

In an effort to attract more minorities and females to their apprenticeship program, Company A invited a nonprofit agency (called NPA herein) with experience in recruiting and training minority apprentice applicants in the construction industry to work with them. NPA accepted, and began operation near the Company A plant in October 1976. NPA's activities are funded primarily by the U.S. Department of Labor.

NPA's program consists of outreach to find minority and female apprentice prospects; screening to select promising candidates; training to upgrade skills required for apprentice entry exams; and follow-up after placement to provide continuing social support and other assistance. The NPA program is six to eight weeks in length, with students remaining in the program until they are deemed ready to pass the apprentice entry tests or eight weeks, whichever occurs first.
Classes meet eight hours per week, during which time the students are tutored in mathematics, principles of mechanics, and spatial relationships.

NPA trains eighty students at a time. Two-fifths of these students are company employees who are referred by a company representative after failing the apprenticeship entry exam or who apply directly based on word-of-mouth knowledge of NPA's activities.

Three-fifths of the students are not Company A employees; these persons apply to NPA on their own. Such applicants are given seats in the class only after all Company A applicants are enrolled. The outside applicants are screened by an apprenticeship aptitude test, interviews, assessment of work experience, physique, family status, and other characteristics believed by NPA to be predictive of success in apprenticeship.

In assessing NPA's performance, it should be noted that the screening procedure outlined above leads to admission of a rather small proportion of applicants to the tutorial program. Of over 1,250 applicants in 1977-78, 340 students began and 255 completed the tutorial session.

Graduates of the tutorial program are referred to Company A for testing. Slightly more than four-fifths of the NPA referrals qualify for the apprenticeship or helper training program of their choice. Approximately 10 percent of persons passing the test who were not employees of Company A were hired directly into craft openings. An additional 66 percent were hired into non-craft jobs from which they could bid for craft openings. Some have not chosen to bid for reasons that will be explored further as this study progresses. The remaining 24 percent were not hired as of January 1980.

NPA has been a relatively fruitful source of female apprentices for Company A. Approximately 38 of the 55 female apprentices in the three occupations being examined here, and 45 of the 76 total female apprentices, were recruited through NPA.

The training school has been the predominant source of female craft workers in Company B. As tables 4 and 5 show, 106 of the 122 female craft workers in Company B are motor inspectors or millwrights, the two occupations for which the training school has provided training. Approximately two-thirds of the 106 female motor inspectors and millwrights were recruited into the training school from outside the firm through CETA, whereas one-third were recruited from among Company B employees.

The other route into the motor inspector and millwright crafts at Company B, recruitment from trade schools, has provided no females. Company officials explain that this is because very few females attend such trade schools and those few are highly recruited.

In summary, the extent to which female craft workers in the two study steel mills have been recruited through special programs, both external and internal to the firms, is striking.

## Conclusions

Although the present study is at an early stage, a few conclusions concerning women in craft occupations in the midwest steel industry seem warranted. It should be emphasized, however, that the conclusions relate primarily to hiring and training activities in the early years of the effort to increase female participation in craft jobs. Further, the conclusions are based on these two mills at this particular time.

The first conclusion is that the number and proportion of female apprentices and other craft workers remain small several years after the implementation of specific affirmative action programs. In mid-1979, fewer than 200 of over 8,700 craft workers in the two steel mills were women. This proportion (2.2 percent) is comparable to that in the more male-dominated crafts nationally. Company B has made more progress than Company A in increasing female employment in craft jobs, but Company B undertook a concerted affirmative action program for women well before Company A began such a program. In addition, Company A has not yet been able to fully implement its affirmative action program, because critical modifications of seniority provisions related to accelerated entry into crafts for women (and minorities) are awaiting signature by the United Steelworkers.

A second conclusion is that the number and proportion of female craft workers has increased substantially in both plants during the period in which affirmative action programs have been in effect, and progress is likely to continue. In 1976, only 0.4 percent of craft workers in the two mills were women, compared with 2.2 percent in 1979. This represents an increase from 27 to 197 in the number of women. In the plant that has had a specific program for women for a longer period, the number of women has increased from 13 to 122, and the female proportion of craft workers has grown from 0.7 to 4.7 percent.

The programs in effect in the plants suggest that females will be introduced into the crafts in increasing numbers in the future. Company A has hired over 1,500 female production workers since spring 1977, and during 1979 32 percent of all workers hired at Company B were women. Thus, in many areas growth of female employment has been more rapid than in the crafts. The introduction of large numbers of women into the plant work forces greatly increases the likelihood that the female proportion of craft workers will continue to increase.

The third finding is that to the present time, special outreach and training programs have been more effective in attracting women to craft jobs than have conventional recruiting and training procedures. Nearly all of the gains to date in female craft employment in the study mills have come as a result of nontraditional recruitment and training programs. Most of the increase in female workers at Company A is a result of the outreach and training activities of NPA, a nonprofit agency working with Company A to increase female and minority craft employment.

At Company B, 106 of 122 female craft workers were trained through the training school, which uses a nontraditional approach to craft training. The recruitment of CETA-supported workers from outside the firm directly into the training school was also an innovation.

Although other options than those used may have produced comparable results, it seems clear that conventional recruitment and training procedures would have produced poorer results up to the present time. As the female production worker population in the plants increases, traditional recruitment and training procedures may be more effective. For example, in Company A in 1979 there were 168 unsuccessful bids by females for craft jobs. In most cases, the reason for these bids being unsuccessful was insufficient seniority. As females accumulate greater seniority, or as they are permitted accelerated entry through modifications of restrictive language in collective bargaining agreements, more women may enter crafts through traditional channels.

A final observation is that at the recruitment and training level, public policy can affect the number of women in craft occupations, given favorable hiring conditions such as existed in these firms from 1976 through 1979. Though other affirmative action efforts have been undertaken at both firms, the specific programs studied herein can be directly linked to public policy decisions in the form of consent decrees and conciliation agreements that required specific affirmative actions.

It should be pointed out, however, that both companies were doing a great deal of hiring in the study period, both for replacements and to support a 15 percent expansion in employment. Firms with declining employment could not have accomplished what has been achieved here.

It should also be emphasized that the results reported here relate exclusively to recruiting and training women for craft work. We do not know how craft women fare in these mills once they are on the job. Such information will be particularly interesting in light of the different recruitment and training approaches taken by the two companies. It is obviously critical to know whether those women who are hired are staying in the positions and performing on a par with the male work force. Performance on the job, satisfaction with craft work, and longevity in the occupations are important measures of the ultimate success of the efforts to increase the number of women in craft occupations in the steel industry. These data will be collected and reported at a later time.

At that later stage of employment, it can also be anticipated that a variety of factors may contribute to the outcome. Overt discrimination is one possibility. Other possible causes include women's awareness of the opportunities, their taste for craft work, their perception of job requirements, and their evaluation of their own capabilities to perform the job. Through interviews with both workers and supervisory personnel, we hope to determine the role of each of these factors in predicting female performance in craft occupations in particular, and in the bargaining unit more generally.

In summary, there is evidence of positive change in the pattern of female craft employment in the basic steel industry in the midwest. The future magnitude of these changes, their causes, and their effect on both the workers and the organizations involved will be the focus of our continuing investigation.

## RESPONSE

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These three papers and the ongoing research that they represent make a significant contribution to what we know about working women and programs designed to serve them in general and to what we know about women in nontraditional blue-collar jobs and apprenticeship in particular. Research in these areas, like women in apprenticeship, has been scarce. The authors are to be congratulated for presenting papers on work that is in progress. The research background and preliminary findings are particularly important and appropriate to the goals of this conference: enabling practitioners to discuss, suggest, and contribute to the research. This process will make the research more relevant and useful, reflecting the concerns and utilizing the experiences of program staffs and policymakers.

From the beginning we want to emphasize the importance of two concerns in doing research--accuracy and usefulness. While research on women may be new, research on apprenticeship is not. To do accurate research on apprenticeship you need to select organizations and sites carefully and involve the unions and joint apprenticeship committees.

### Common Themes

Four common themes cut across the research; these themes have both research and policy implications. The first theme may be called change and no change. The number of women in apprenticeship is increasing. In Wisconsin, in the steel industry in the midwest, and in ten government-sponsored training programs across the country there are more women in several areas of apprenticeship. To quote Kane and Miller, this research begins to "dispel the misperception that women are not available." Despite this change, however, the overall percentage of women in apprenticeship remains quite small, and the percentage of journeymen who are women is even smaller. There is continued evidence of reluctance to accept and place women on the part of unions and companies.

The theme of change and no change raises an important problem--the definition of progress. Is the cup half empty or half full? How many women in apprenticeship constitute an acceptable level of progress for how long? The definition of progress is continually being refined and should continue to be an important subject of discussion.

The second theme that emerges is the effect of public policy in changing the sex composition of apprenticeship. Consistent with other reports, we find that there is more progress where there has been strong government intervention. The authors attribute the increase in the number of women in apprenticeship to the establishment of goals and timetables for women in the construction trades and to consent decrees and conciliation agreements in industry. The impact of government intervention suggests the need for continued enforcement efforts and the importance of follow-up and monitoring.

The importance of special programs is the third area stressed in each paper. Again consistent with other research and program experiences, more women are successfully recruited and placed and more women complete apprenticeship where there are special outreach, skill development, training, and counseling programs. These programs are particularly important in this time of transition, as the first women are entering the trades and breaking down initial barriers.

The question of who should support these programs--the government, employers, joint apprenticeship committees--is closely related to the questions raised by Franklin about financial incentives for apprenticeship in general. Regardless of who finances the program, it appears critical that both employers and unions be involved if women are to become full participants in the skilled trades work force.

The fourth common theme is a concern for minority women. There appear to be differences in opportunities and choices for minority women as both race and sex barriers are broken down. We would argue that no U.S. Department of Labor program can take the one-track approach suggested in Franklin's paper. There is nothing in our history to suggest that by increasing the total number of apprenticeship opportunities some fair share will go to women in general. Nor is there evidence to suggest that the needs of minority women will be addressed or that by providing support for minority women the obligation to assure equal opportunity for all women will be fulfilled. The elimination of discrimination and the provision of equal opportunity in apprenticeship requires multiple policies and programs for the foreseeable future.

## Contributions of These Studies

While there are common themes in the research, each study also offers specific areas for further study that we would encourage the researchers to pursue. In the Wisconsin study there is the opportunity to follow women who have entered nontraditional apprenticeship programs and then dropped out. Only Walshok's work begins to address issues pertaining to those women who quit. Most research focuses on those women currently in nontraditional jobs, and for good reason. It is very difficult to locate the women who leave. If at all possible Norma Briggs should pursue this aspect of the research.

Another aspect of Briggs's paper is its illumination of the change of an occupation from one sex to the other. The change in the barber apprentice program from entirely male in 1970 to three-fourths female in 1979 is a phenomenon warranting further study. How is this change affecting the trade? What is happening to wages relative to other non-traditional apprenticeship programs? Are there other trades where this trend is occurring?

Kane and Miller are addressing two issues that, while important for women, also have direct implications for apprenticeship more generally--training costs and age. There has been far too little assessment of costs in affirmative action efforts to date. It makes sense that the initial transfer of women from one type of work to another will involve initial start-up costs as well as some ongoing costs. It is difficult to determine who should pay these costs, and for how long, if we do not know what the costs are. Their preliminary figures raise several areas for more data collection and analysis: differences in cost between preapprenticeship and outreach; variation in costs within these two categories; and differences in cost between service and placement. It will also be important to break down the costs to assess the advantages and disadvantages of having the services delivered by independent groups (e.g., women's groups) compared to sharing the costs of equipment and trainers at the company or work site, where they might serve other needs as well. A third alternative would be some combination of independent groups (with credibility among the client population) and facilities, equipment, and trainers from groups of employers within or across industries.

Age is an issue of continuing concern in apprenticeship. For several years now the upper age limits have been seen as detrimental to women. It appears that women in their late twenties and early thirties are more interested in nontraditional work. Kane and Miller take us a step further by suggesting that older women may be not only more interested in applying but also more likely to complete a program once admitted. Again, it is important to look at dropouts, if possible, and to compare dropout rates and ages for women and men.

Reuben's emphasis on apprenticeship for teenage youth points to what will be an ongoing policy conflict for youth and women. The continued early sex stereotyping for girls and the perceived short-term commitment of young women to the work force, coupled with the lack of any coherent family policy in this country, suggests that emphasis on youth will benefit young men to the disadvantage of older women. Young women continue to think of leaving work for family reasons. The realities of the lack of child care services and increasing economic pressures suggest that young women will continue to drop out of the work force for childbearing and return in their late twenties with 30 years ahead of them in the work force and a new interest in high-paying skilled jobs and apprentice programs. Apprenticeship opportunities need to be available to many age groups.

## Issues Raised by Ullman and Deaux

The steel industry research is a new and exciting opportunity to study the impact of a major consent decree in a major industry. This study is unique for two reasons. First, as Ullman and Deaux point out, there are more craft workers in manufacturing than in any other industry, but most of the research and much of the equal opportunity activity has focused on the construction industry. Second, the steel industry consent decree is one of the few in which a union is involved. Other agreements, such as those with American Telephone and Telegraph and General Electric Company, did not include the unions which have collective bargaining agreements with those companies. Although it is not clear in the paper, it appears that an interesting comparison can be made between the two companies if indeed the conciliation agreement signed by one company instead of the consent decree did not include the steelworkers union.

The U.S. Equal Employment Opportunity Commission (EEOC) has in the past treated unions as similar to employers, suing them for discrimination or ignoring them. This approach is based on a craft model in which unions are involved in recruitment, in access to training through Joint Apprenticeship Committees, and in job assignment through referral and hiring halls. The EEOC is now revising its policy to better utilize the collective bargaining process, which would appear to have direct implications for industrial unions. The Ullman and Deaux study can provide relevant information as this new policy is developed, refined, and implemented.

Within these policy questions, there are several other issues that Ullman and Deaux might address as their work in the steel industry continues. First, particular attention should be paid to the women currently employed in the plant in both clerical and factory work. The companies have had the good fortune to be hiring during the last several years. The women already employed become an increasingly important resource, however, when less favorable economic conditions require transfers rather than new hires. Furthermore, there is a tendency to assume that we know the interests of women currently employed in clerical work, which may or may not be accurate.

Second, this is a study of ongoing change. Researchers need to be aware that studying first women provides information on the experiences of first women. It does not necessarily answer many questions for the women who follow. The pioneers, by their very presence, have changed the situation. Problems and barriers remain but they may be somewhat different.

Third, Ullman and Deaux propose to study the characteristics of the women. We would urge them to also look at the characteristics of the jobs those women most recently left. Apprenticeship may be most appealing to unemployed women. Even for women in traditionally low-paying clerical jobs, apprenticeship may mean, at least for several years, a loss in benefits, salary, and seniority, while increasing the risk of layoff and requiring many additional hours of unpaid training time.

Given the on-the-job nature of much of the training in apprenticeship, it is particularly important to better understand the attitudes and reactions of male co-workers. Several small studies suggest that male co-workers can be extremely helpful; others show that for those women who face male hostility and harassment the strain can be severe. The response of men to what is an enormous social change goes well beyond sex-based stereotypes of blue-collar workers.

It is important to look at the role of the union, collective bargaining, and the grievance process in the design, implementation, follow-up, and monitoring of equal employment agreements. At a very minimum the authors need to make clear how they gained access to the sites and whether the research is being done in cooperation with both management and union or independently with one or the other.

# CHAPTER V

# APPRENTICESHIP ISSUES FROM THE FEDERAL PERSPECTIVE

# LEGISLATIVE PROSPECTS IN THE APPRENTICESHIP AREA

Ray Marshall
U.S. Department of Labor

I am very happy to have the opportunity to discuss a subject dear to my heart--apprenticeship. I have had a close relationship with apprenticeship for quite a few years now. Certainly one of the high points in my past experience has been that of serving as Chairman of the Federal Committee on Apprenticeship. The knowledge gained and friendships developed while serving in that capacity have been invaluable.

I came away from that experience with the strong conviction that an expanding and improving apprenticeship system is essential to the welfare of workers and the economic health of the nation, and I believe that we need to continue to improve the system and to make it a much more integral part of our overall economic policy, and a more integral part of our overall employment and training activity.

I have not changed that conviction that I always had about the need for researchers and policymakers to interact. We had a term for it in our shop at the University of Texas, and that was that we wanted to do everything we could to avoid sick chicken research. One of the big problems in our part of the country is the differential survival rates of chickens, and so, in typical academic fashion, a group of land grant colleges in the South got together and formed a consortium to deal with that problem. They spent about five years on it and about $10 million in research funds, and at the end of that time they came to the very sound conclusion that when chickens get sick those that linger a few days have a whole lot better chance of making it than those that die right out.

I have learned that, just as we do not need sick chicken research, we do not need sick chicken policies in the country, and that one of the best ways to avoid that is to get out and find out what is worth knowing and what the problems are, and to try to answer questions that people are asking. I think one of the problems with many of our academic colleagues is that not only do they spend a lot of time on sick chicken research--quantifying the obvious--but they spend a lot of time answering questions nobody ever asked or is likely to ask. Through interchanges like this conference, I think we can do a lot to keep the research relevant. Research ought to be able to put things in perspective, to quantify things that need to be quantified, and to provide some guidance in things that are important.

I think that one of the problems we have had with the apprenticeship system is that, while those people who are part of that system understand it very well and have been able to maintain excellence in the good programs, it tends too much to be isolated from public opinion; not enough people in the country know about apprenticeship and the values that it has. I also believe that we need to be forward-looking, as there are a lot of changes going on in our economy and in our world, and some of these changes are so pervasive that they will affect all our institutions. Those of us who are concerned about apprenticeship need to be alert to the impact of these changes on this important system of ours, so that we can cause it to be responsive.

Today I want to outline a number of legislative proposals for you, but first I want to review the Carter Administration's accomplishments and policies in the apprenticeship area.

I am particularly pleased to meet with you at this time because I am able to report some significant and positive accomplishments in the Department of Labor program that concerns what is generally considered to be the best method of training American workers for the skilled trades--the National Apprenticeship Program.

The apprenticeship program has had some outstanding achievements and record-breaking accomplishments in recent years. We are especially proud that we have been able to more effectively target our programs and that we have expanded participation to include all Americans. Indeed, in terms of promotion and development of apprenticeship opportunities, never has so much been done to assist women and members of minorities in entering apprenticeship programs. We also have developed better program linkages with the programs of the Comprehensive Employment and Training Act. During the last three years, approximately a half million young people have become registered apprentices.

The most current available data indicates a record-breaking high of 395,000 registered apprentices receiving training during a single year. There were over 130,000 new apprentice registrations during this period. Additionally, there were 9,500 registered apprentices in military programs--also a record number.

The percentage of women apprentices also set a national record of 3.1 percent. This is a figure we are not satisfied with but one that represents a significant increase from the 1.2 percent of 1975. The percentage of new apprentices who are women is also a record-breaker at 4.3 percent; this compares to 2.2 percent in 1975. Minorities represent over 18 percent of all registered apprentices. It would be hard to find an institution in the American economy that has experienced greater changes in terms of equal opportunity.

The Bureau of Apprenticeship and Training (BAT), in cooperation with the Women's Bureau, is giving top priority to promoting and developing increased opportunities for women in apprenticeship. These efforts include the preparation of slide and script presentations on specific apprenticeship requirements as well as meetings between Bureau of Apprenticeship and Training staffers and women's groups. Over 2,000 such presentations have been made since January 1979, with over 83,000 people in attendance. Six public service television announcements designed to interest women in apprenticeship have been produced and are currently being field-tested in ten locations (Boston; Rochester, N.Y.; Philadelphia; Atlanta; Indianapolis; Houston; Des Moines; Salt Lake City; San Francisco; and Portland, Oregon). A number of publications have been prepared and distributed. They include *A Women's Guide to Apprenticeship* and *Women in Apprenticeship: There's a Future in It*. A film has been produced entitled *Breakout: Women in Trades*. On the local level, numerous magazine and newspaper articles have been written addressing the advantages and opportunities to women of entering the skilled trades through apprenticeship.

I am particularly proud that we have increased and improved coordination of efforts between the apprenticeship community and CETA activities. There are a substantial number of references in the reauthorized CETA that encourage consultation with BAT regarding training in apprenticeable occupations.

BAT staff members have been assigned to work with individual CETA prime sponsors to inform them about apprenticeship in their localities and to assist them in developing cooperative relationships with apprenticeship programs. Special slide shows and scripts were prepared for this purpose, and about 600 such presentations have been made with over 12,000 persons in attendance. A special survey dislosed that 169 BAT representatives are members or consultants to Private Industry Councils and that there are about 300 current apprenticeship/CETA linkage programs. In an effort to assist in these cooperative endeavors, a CETA/Apprenticeship Technical Assistance Guide (TAG) was developed and issued. This guide includes models of CETA and apprenticeship linkage programs and has proven to be a most popular and useful publication, with over 10,000 copies having been distributed nationwide.

A study conducted by an outside consulting firm about two years ago showed that there were about $34 million in CETA funds directed to apprenticeship-related activities. A recent informal survey reported that approximately $95 million in CETA funds are now being devoted to apprenticeship-related activities. This $95 million breaks down to $45 million in local prime sponsor funding, $10.5 million in governor's grants, $10 million in New Initiatives funds, and $29 million in Targeted Outreach and National On-The-Job Training (OJT) monies.

Increased linkages between apprenticeship and CETA clearly are a positive step in directing resources to areas where the disadvantaged can obtain meaningful training for employment at high skill levels. I fully expect such cooperative efforts to continue at an increasing rate.

A recent accomplishment that raises great hopes is the initiation of a program linkage between BAT and the Employment and Training Administration's Office of Welfare Reform. This effort is intended to promote increased apprenticeship opportunities for welfare recipients. It was agreed, on a test basis, that the Office of Welfare Reform would hire staff in 15 separate locations to serve as apprenticeship liaison representatives. These representatives will work closely with local BAT staff members in assisting apprenticeship promotional efforts for welfare recipients.

Another significant and far-reaching project has been the development by BAT--for the first time in its history--of a comprehensive five-year program and management plan. This plan will establish priorities for Bureau activities for the period 1980-84. It is a living document in that it will be continually reviewed for currency and will be revised and updated as appropriate.

This plan sets forth goals for each of the next five years and represents the most comprehensive consideration ever taken of the National Apprenticeship Program, its goals, and its future. The five-year plan has the following twelve components: research, legislation, goals by industry, national public policy, linkages, staff development, equal employment opportunity, on-line data systems, quality improvement, improved planning and control systems, program expansion, and management improvement.

In accordance with this plan, major efforts are being undertaken to expand apprenticeship training into industries and occupations that have not been traditionally strong in apprenticeship. At the current time over half of all registered apprentices (about 56 percent) are in the construction industry. Manufacturing accounts for about 20 percent, while services and public administration account for only 5 percent each. In terms of occupations, at the present time ten occupations represent 60 percent of all apprentices; carpenters represent 15 percent and electricians represent 12 percent of the national total.

Another major component of this five-year plan is legislation. At the federal level, public policy in apprenticeship stems from the National Apprenticeship (or Fitzgerald) Act of 1937. From time to time, consideration has been given to amendments to this act or to new legislation, particularly in discussions of financial incentives and major program expansion. To date, no such amendments or legislative specifications have been offered by the U.S. Department of Labor for congressional consideration.

A discussion paper outlining specifics for possible changes in the apprenticeship program was circulated by BAT to members of the Federal Committee on Apprenticeship, the American Apprenticeship Roundtable, and state apprenticeship agencies. These recommendations, put forward for consideration and comment, are fairly broad in scope. Briefly, they are as follows:

1. Financial support to state apprenticeship agencies. This provision would provide grants to states to establish or maintain a state agency to carry out the provisions of the apprenticeship act in cooperation with the secretary of labor. Grants would be contingent on submission of an acceptable state plan.

2. Grants to local apprenticeship committees. This provision would provide financial support to local apprenticeship committees for administrative costs. It would also provide support for multi-trade committees in each community, thus serving those trades too small to support committees.

3. Federal support of apprenticeship on occupations with critical skills shortages. This provision would grant partial reimbursement of the training costs of apprenticeship programs that provide training in occupations designated by the secretary of labor to be in short supply and determined to be essential to the nation's continued well-being.

4. Support of apprenticeship during economic downturns. This provision is designed to reduce the instability of apprenticeship in industries where apprentices are frequently lost to the trades because of frequent fluctuations in the level of business activity. Under this provision, during slack periods the secretary would authorize and fund local apprenticeship committees to undertake public service projects and off-site training as a means of maintaining the continuity of training.

5. National promotional campaigns. This provision would provide for a variety of activities, best administered from the national level, to promote apprenticeship. It would include the following specific activities: (a) promotion and registration of apprentice programs among multi-plant and multi-state firms; (b) sponsoring of national information programs; (c) funding of promotional and development contracts with trade associations and unions to extend apprenticeship into new industries.

6. Tax credits for apprenticeship programs. This amendment to the Internal Revenue Service Code would provide an incentive to

employers to hire apprentices who, because of their newness to the craft, would be necessarily less productive than skilled craftworkers.

7. Mandatory apprenticeship in federal contracts. This provision would require that any contract in excess of a certain amount contain a provision requiring the training of apprentices in crafts related to carrying out the contract.

8. Apprenticeship research. This provision would establish a comprehensive program of research and demonstration projects intended to improve the quality of training and to assure the full participation of women, members of minorities, and the disadvantaged in apprenticeship.

9. Voluntary emergency/disaster cadre. This provision would allow for the organization of apprentices and craftworkers into voluntary stand-by cadres. These cadres would be available to assist in major disasters at the local level and would receive special emergency training as part of their apprenticeship training.

10. Affirmative action and EEO programs. This provision would establish programs and activities to assist in reaching affirmative action and equal employment opportunity goals.

11. Programs to preserve historic hand skills. This special provision would encourage apprenticeship in those skills and crafts that are of historic importance and are in danger of disappearing.

There has been enthusiastic support for federal government, as an employer, taking the initiative and setting the example in apprenticeship. I have under consideration now a plan that would provide certain incentives to federal agencies, specify certain requirements, and encourage such agencies to launch innovative apprenticeship programs. These federal agencies could become pacesetters in projecting and planning for future skilled jobs by training through the apprenticeship system.

To be honest, reaction to some of the recommendations has not been overwhelmingly supportive. However, we will continue to search for innovative methods to better promote and encourage the growth of apprenticeship. We continue to be receptive to ideas for new approaches. The U.S. Department of Labor is committed to protecting the welfare of the working people, and an important part of that is ensuring that workers receive the best training possible. The growth and expansion of apprenticeship is vital to our country's best interests, and we will be continuing to consider various approaches to that end, including support of appropriate legislation.

# APPRENTICESHIP TODAY AND TOMORROW

James P. Mitchell
U.S. Bureau of Apprenticeship and Training

In 1945 science fiction writer Arthur C. Clarke, author of 2001: A Space Odyssey and other works, suggested the possibility of synchronous satellites as a means to low-cost satellite communication. In 1957 the Russians launched the first satellite; in 1962 NASA launched Telstar, the first communications satellite; and a year later Clarke's idea became a reality with Syncom, a synchronous orbit satellite. All this occurred within two decades. Technological change has been with us since the invention of the wheel, but there is little question that the pace of change has accelerated in the last half of this century. With widespread application of computers, sophisticated information processing, increasingly complex machines, industrial robots, modular fabrication, electronic teaching, and more in an almost endless list, it is clear that with change comes a redesign of work that is transforming both blue-collar craft and production jobs and white-collar and professional jobs. Change is increasing, not lessening, dependence upon the worker who has mastered the broad range of related task skills that make up a trade, who understands "why" as well as "how," who demonstrates a maturity of judgment that is the mark of a craftworker.

## Occupational Mix and Craftworker Demand

The Bureau of Labor Statistics (BLS) uses four major occupational groups in its projections. These are: (1) white-collar workers in professional, technical, clerical, sales, and managerial jobs; (2) blue-collar workers in craft, operative, and laboring jobs; (3) service workers; and (4) farm workers.

White-collar workers now represent about one-half the labor force. Their number exceeded that of the blue-collar group beginning in 1955 and has experienced the highest growth rate. Blue-collar workers have grown at a slow rate over the last decade, somewhat below that for service workers. Farm workers continue a decline beginning with the 1950s.

Within the blue-collar group, craftworkers are expected to increase from 11,278,000 in 1976 to 13,700,000 in 1985, a change of 21.6 percent, well above that of the group as a whole. The increase in craftworkers is about equal to the percentage change for the white-collar group and slightly below that for the service worker group.

Employment growth is only part of the demand side of the equation. The need to replace workers who die or retire is expected to produce nearly twice as many jobs as employment growth alone. In addition to work separations, the transfer of workers between occupations is an important factor in occupational mix. While we may not agree entirely with BLS economic model and assumptions, the trends conveyed are important. For example, assuming an equal annual rate, the net craftworker demand will exceed 500,000 openings annually through 1985. Formal or registered apprenticeship completions totalled 54,000 in 1978, a high year, but obviously not the major source for new journeyworkers.

## Supply and Training of Craftworkers

Oversimplified, the potential supply of workers for any occupation consists of persons already employed in that field plus individuals available from other sources. These may include first time labor market entrants, persons completing training programs specific to the occupation and from related fields, qualified persons transferring, immigrants, unemployed persons, and persons not in the labor force. While data are available on registered apprentice completions, for many occupations that require formal training adequate analyses of supply are impossible due to lack of information on completions and entries. Some data are available on graduates of technical institutes and junior colleges. Information on technicians and skilled persons released from military and completions from formal apprenticeship can be tabulated, but information on the greater part of training within industry, both structured and unstructured, has not been gathered. BLS conducted a survey of 5,000 establishments in the metalworking industry covering 14 occupations and found that about 15 percent of the establishments provided structured training, but no really comprehensive data are available. The important considerations are these: (1) the demand for craftworkers will continue to grow; (2) the growth by occupation will be diverse and more pronounced in white-collar and service groups; and (3) prime age young adults will be fewer. The goal adopted by the Federal Committee on Apprenticeship (FCA) to achieve universal acceptance and reliance upon formal apprenticeship to satisfy craftworker needs before the year 2000 may be a challenge beyond the capability of the system as presently structured.

## Plans of the Bureau of Apprenticeship and Training (BAT)

The targeting of the promotional efforts of BAT for the period from 1980 to 1985 is consistent with the BLS projections. Our base year (1978) data reflect an all-time high, with over 300,000 registered apprentices in training at end of the year. Accessions during that year of 132,000 were also an all-time high. Minorities at the end of period represented 18.2 percent of the total, somewhat higher among accessions. Females were 3.1 percent at end of period and 4.3 percent among accessions. Preliminary 1979 data and operating reports for the first quarter of fiscal 1980 would indicate some falling off in the upward movement, but the number of apprentices remains above 300,000, with continued gain in participation of women in apprenticeship. I anticipate that with any sustained higher level of unemployment in construction, numbers of registered apprentices in training will be reduced.

Our priority effort to encourage increased participation by women will continue. By mid-year we should be able to assess the response to the television public service announcements. We are reprinting the film "Sky's the Limit" and participating with the Women's Bureau in their production of a similar informational film series. Our linkages at the local level with CETA and other special programs are supportive of this priority effort. In our effort to expand the program laterally, we are planning a promotional film for manufacturing and a conversion of "Break-out" to a more useful media form. We are also updating the booklet "How to Set Up an Apprenticeship Program," and developing a new exhibit and additional pamphlets. I have committed our limited resources for these purposes as early as possible in order to have the promotional aids in the field within this fiscal year.

Among all other priorities, we intend to give attention to the effectiveness or quality of training in existing programs. I am pleased that the FCA will also be considering this matter.

If one examines the list of occupations we published on March 11, 1980 (everything from accordion maker to winemaker), it may seem that we already have great diversity in the system, but the fact remains that nearly three-fourths of the registered apprentices are in only a dozen occupations. If we can come to an objective procedure for determining apprenticeability of occupations, a uniform procedure acceptable by all registration agencies, we should then be able to lift our horizon and examine all recorded occupations for potential apprenticeability.

## Looking Ahead

In speculating about the future of apprenticeship, it is useful to have in mind two essential elements of our system. The first is that apprenticeship is structured training on-the-job coupled with trade-related theoretical instruction or studies; it occurs over a relatively long period of time and the terms and conditions of employment and training are stipulated in advance. The second key element is that apprenticeship has as its goal the acquisition of all-around, transferable skills usable in differing employment situations.

Private enterprise engages in training to meet various business needs. These are to train new employees; to improve employee performance in present jobs; and to upgrade employees for new responsibilities including replacement needs. It is my view that without outside financial inducements or outside compulsion most employers will enter an employment and training relationship with apprentices in the expectation that the costs of training will be recovered through the apprentices' contribution to business output. I also believe that employers are willing to risk having completions and near completions leave their employment.

Referring again to the occupational list we published, it is evident that specialization of training in certain occupations has emerged, and not just as a recent event. While apprenticeship continues to be not firm-specific, the model in the nuclear nineties, or whatever the decade ahead will be called, may be a broad-based initial training capped by specialization, with possibly some element of firm-specific training. The quality of the basic training in such an arrangement, which may be in block or modular form, will be very important. This is also an area where the views of employers and of labor will not be reconciled easily. In my view, unless the apprenticeship community can deal with this issue in a manner that both retains the integrity of the system and accommodates, in part, employer concerns, the trend toward specialization will continue.

I believe another change, one not involving a change in apprenticeship philosophy, will be growth of the system in the public sector. In government there exists the capability to plan and train for future as well as immediate skill needs. Government is in a better position to finance a more sustained, continuous training effort that is less influenced by the cyclical fluctuations that adversely affect apprenticeship in the private sector. The public sector can create an excess capacity (this has been suggested) and train in compensation for shortfalls in the private sector. Government offers an ideal environment for experimentation with innovative training. We intend to foster apprenticeship in public enterprises, a long-standing recommendation of the FCA, and will propose for fiscal 1982 an action policy to this end.

Last month, at the invitation of the government of Israel, I participated in a review of their special youth programs and apprenticeship in that country. The Israeli concept is quite unlike ours in that its primary focus is upon the individual needs of young people. Training content of the program and industry skill needs are secondary considerations, if considered at all. I came from that experience with a reinforced conviction that apprenticeship as practiced in this country is a sound, viable program, one with which I am proud to be associated.

# FEDERAL POLICY INTERESTS IN APPRENTICESHIP DEVELOPMENT

Ernest Green
U.S. Department of Labor

Apprenticeship has many advantages, including flexibility to adjust to new processes and materials, systematic training, employment security, decent starting wages, higher lifetime earnings, and foundation for individual advancement.

Emphasis upon apprenticeship initiatives was one of my top priorities when I came into the Employment and Training Administration. Federal expenditures were significantly increased. We worked to expand apprenticeship into jobs beyond the traditional construction industry and to increase skill opportunities for such labor force segments as minorities, women, and veterans. Substantial headway has been made in all of these areas, but particularly in regard to three initiatives that I would like to summarize briefly.

In the multi-trades program we have developed mechanisms through some twenty contracts and more than a thousand programs to help small apprenticeship programs in specific areas and to bring apprenticeship to such occupations as dental assistant, firefighter, and optical technician. This initiative has produced more than three thousand new apprentices, a figure considerably beyond the goal we had established.

It has also helped us to register small programs with the appropriate federal or state agency. It has served these programs by providing them with assistance in keeping records; developing work processes, apprenticeship standards, and training materials; and recruiting, selecting, and testing apprentices. And it has helped employers to develop skill training for previously excluded groups.

In the successful projects under this initiative, we have found that not only is there a close and effective relationship with the local Comprehensive Employment and Training Act prime sponsor, but that linkages are formed throughout the entire community. A broadly representative advisory committee is actively involved in promotion efforts; industry leaders become directly concerned with program development; local educational institutions provide related instruction; and there is energetic staff assistance and follow-up.

The second key initiative has been the apprenticeship/school linkage projects, which create a means to move high school youth into apprenticeship opportunities. Students in the early high school grades can be introduced to apprenticeship options and qualifications, juniors can receive hands-on training in a classroom shop, and seniors can be employed half-time as registered apprentices while continuing their formal education, including trade theory, during the remainder of the day. Local prime sponsors that were set up by the Comprehensive Employment and Training Act (CETA) have cooperated in this effort and have proved to be invaluable in this initiative. Employers are closely involved to ensure that the programs respond to local labor market needs. Currently, there are seven contracts for such programs; together with one already completed contract, these have resulted in nearly two thousand new apprentices.

The third initiative is the campaign to promote and expand apprenticeship in selected growth industries. This initiative--with 20 completed contracts and a similar number of active contracts--has produced nearly 25,000 new apprentices. During fiscal year 1979, a dozen occupations became apprenticeable. Energy-related occupations received particular emphasis, with more than 18,000 apprentices being trained in such areas as solar energy, weatherization, biomass, fossil fuels, and nuclear energy.

In outlining these three initiatives, I have stressed their linkages with CETA, and this has been for a very good reason. Unless we can increasingly and effectively link up with the job and training efforts of CETA prime sponsors--particularly now that we are emphasizing outreach to the private sector of the economy--our efforts will be hobbled. Representation of the Bureau of Apprenticeship and Training (BAT) on private industry councils will tremendously facilitate such cooperation. CETA/apprenticeship linkages are called for, of course, under CETA reauthorization of 1978. There has been increasing utilization of BAT staff within CETA prime sponsorships, and a growing number of technical assistance materials are available to promote and guide linkage activities. The fact that there are currently some 300 CETA/apprenticeship linkage programs, and that some $95 million in CETA funds goes toward apprenticeship-related activities, underlines the importance of close cooperation.

A thread that ties together what I have discussed so far is the priority goal of equal employment opportunity stressed at the beginning of these remarks. We must continue to expand apprenticeship opportunities for such groups as minorities, women, and veterans. Even though we have made some good progress in this area, there remains much to be accomplished. Certainly the fact that we have more than doubled the percentage of women apprentices to just over 3 percent, and that members of minorities now constitute more than 18 percent of all registered apprentices, shows movement in the right direction, but this movement forward needs to be maintained and accelerated.

The comprehensive five-year plan of BAT lays out a blueprint covering the first half of this decade. This document is designed to flexibly address our needs in some key areas. One, of course, is research. We need information that easily translates to improvement activities. Another is establishing apprenticeship goals by major industrial classifications. We must more nearly match the number of registered apprentices and programs with what is needed within specific industries. Another is to clarify public apprenticeship policy. This involves redefinition of federal and state roles so that duplication of effort is eliminated and programs become stronger and more balanced. It also involves staff development and training. We must concentrate not only on technical skills but on maximization of opportunities for staff personnel to develop their full potential. We must ensure that staff training is up-to-date, responsive to actual labor market conditions, and cost-effective. An on-line apprenticeship data system must be developed. By the end of the five-year period such a system will be in place and operational, with the capacity to serve the entire national apprenticeship and training system. We also seek improvement in planning, management, and control. We must make maximum utilization of our resources by moving, over time, to the most rational, economical, and productive organizational structure possible, and we must establish better mechanisms for goal-setting, follow-up, and use of data.

The five-year plan seeks a realization of our full expansion potential. We must encourage American industry to accept more widely and rely more heavily on the apprenticeship system. To this end, we have set a goal of half a million apprentices by the close of the five-year period--almost double what we have now.

# CHAPTER VI

# INNOVATIONS IN INDUSTRIAL APPRENTICESHIP: THE GENERAL MOTORS EXPERIENCE

# SOME INNOVATIONS IN INDUSTRIAL APPRENTICESHIP AT GENERAL MOTORS: INTRODUCTORY COMMENTS

Donald Pfeifer
General Motors Corporation

The skilled trades population in General Motors (GM) stays at around 17 to 18 percent of our total hourly work force. In other words, almost one person in five of our work force is a skilled trades person. That amounts to approximately 80,000 skilled trades people, including 6,000 apprentices. Our 6,000 apprentices are in training to be electricians, millwrights, pipefitter-plumbers, machine repair persons, tool and die makers, model makers, die designers, and craftworkers in other industrial trades.

We believe in apprenticeship training at General Motors, and its use has expanded greatly in the last fifteen years. We used to have 1,500 apprentices in 70 different manufacturing plants. Today, 6,000 apprentices are employed in 105 different manufacturing facilities. Most of these apprentices are employed in programs jointly sponsored by General Motors and the United Automobile Workers (UAW). We also sponsor programs with the electrical workers', pattern makers', and die sinkers' unions.

We have done quite well over the last few years in increasing the participation of minorities in apprenticeship and skilled trades. We found, however, that the commitment to go into apprenticeship training for our type of work was not as appealing to women applicants as we had hoped it would be. Despite what we thought were our best efforts, we were not attracting an adequate number of women rapidly enough, so we decided to find out what was wrong with our procedures. Frankly, we thought our problem was a recruiting problem and that something was lacking in our appeal or our approach.

To help us understand the issues and react more effectively, we decided to work with a consultant researcher who was a part of a larger effort within the corporation to understand women in nontraditional jobs. Her findings, based on her research and interviews in two GM divisions are challenging, and will help bring about change and improvement in General Motors. And who knows, maybe our experience will be helpful to others.

Although this research was motivated by our desire to improve our position in the employment of women, we find, as you will see, these changes improve the whole program. There will be a gain for men as well as for women. To the extent that better training is accomplished, we are all winners.

## SOME INNOVATIONS IN INDUSTRIAL APPRENTICESHIP AT GENERAL MOTORS: LOCALLY DEVELOPED COMPETENCY-BASED TRAINING AS A TOOL FOR AFFIRMATIVE ACTION

Mary Lindenstein Walshok
University of California at San Diego

Most policymakers, program managers, and social commentators interested in the problem of moving women into nontraditional employment, particularly in the blue-collar work force, have tended to concern themselves almost exclusively with the problem of recruiting women into such jobs. Far too little attention has been given to the equally important problems of orienting, training, and retaining women once they move into skilled blue-collar apprenticeships. Pilot projects at General Motors in the last two years are an effort to broaden our understanding of these problems.

A few assumptions are critical to an understanding of why we believe competency-based training can be an effective affirmative action tool. These include: (1) the assumption that equity and efficiency in apprenticeship training can be compatible; (2) the assumption that what is good for women and members of minorities from a training point of view is good for apprenticeship generally; (3) the assumption that one of the best ways to recruit formerly excluded people into new apprenticeship openings is to have a training and evaluation program that demonstrably helps people succeed; (4) the assumption that success at recruiting and retaining women and minorities will increase when more attention is given to the content, form, quality, and timing of the training experience; (5) the assumption that none of the above can be assumed without focusing attention on the fundamental significance of the journeyman/apprentice relationship in the training of skilled tradespeople in the United States.

The five foregoing assumptions are stated in light of what we know to be the changing character of the American work force--the changing participation, needs, and characteristics of women specifically and the changing place of industry in the experiences and consciousness of young adults generally. Traditional approaches to training skilled workers for industrial jobs have changed very little over the years, although the charactertistics of workers and their needs and attitudes have changed greatly. Industry flourished for years by recruiting skilled blue-collar workers from rural areas and family farms and from among military veterans and sons of skilled workers. When such men began apprenticeship training they came with a set of expectations, understandings, and basic skills that equipped them to be active learners and useful helpers. Their operating mode was to watch carefully and ask good questions. A journeyman, in turn, assumed a minimum level of knowledge and understanding in his apprentices and worried little about formalized approaches to training. For years such a training philosophy worked. However, in the last decade the characteristics of workers entering industry have changed radically.

It is not only the arrival of women and members of minorities that is responsible for this change. There are decreasing numbers of burly, mechanical boys just off the farm, highly skilled military veterans, and sons of blue-collar tradesmen following in their father's footsteps. As the society has become more affluent and mass education has spread, the interest in and familiarity with industrial work and work settings has diminished. With it has come a pool of apprentices, male and female, white, black, and brown, who are all in need of a better orientation and training experience in the workplace than the traditional, nonformalized journeyman/apprentice relationship can provide.

Traditional methods for training and evaluating apprentices no longer assure that they become competent. This is particularly true if those methods rely simply on rotating apprentices from area to area with no explicit statements about what has to be learned and what skills have to be mastered within given areas and time periods. In many industries today, becoming a journeyman is simply a matter of putting in hours rather than of being able to demonstrate skills. This happens because there is little to structure the journeyman/apprentice relationship to assure that teaching and learning take place. The production function of the journeyman can easily interfere with the teaching and training functions. A journeyman may be skilled at his job but not at communicating how to do his job. Evaluations are often based on indirect traits (e.g., good work habits), and are conducted by untrained people. Combined with the insecurity and lack of familiarity many apprentices bring to their industrial jobs, it is not surprising that people end up being rotated through job areas without mastering skills.

This general phenomenon is an affirmative action issue from two points of view. Such a milieu is not a positive one for training people who need to be qualified in a new field. Such a milieu is so ambiguous that it is also difficult to disqualify incompetent people. Myths and prejudices about women and members of minorities getting by "without having to do anything" persist in such environments and claims of discrimination are easily supported in the absence of clear measures and indicators of performance. Competency-based training and evaluation addresses both of these issues because it makes the environment less ambiguous. It does so by spelling out learning objectives, by comprehensively listing concepts, skills, and abilities that must be developed and mastered over specified time increments. It provides a roadmap of the entire training experience on which critical evaluation points and required competencies are made explicit.

For such an approach to be successful, however, it must have an additional set of characteristics. It must reflect the needs and concerns of the specific work setting and be designed and implemented by the journeymen and supervisors who will be responsible for apprentices in a specific work area. Because the character of industrial jobs is variable and the character of work culture differs in terms of sequencing of job tasks, pacing of work, and even location of activities, programs that are designed without local involvement are less likely to be relevant to the realities of the journeyman/apprentice relationship and are less likely to be supported by on-site workers. Competency-based programs potentially can be seen as a burden rather than as a common solution to a shared problem. Thus, in order to respond to the needs for better training in skilled trades, a program that is both locally developed and competency-based has much to recommend it.

Such a program can work from the point of view of management, journeymen, and apprentices alike. It helps the apprentice to know in advance what he or she needs to learn and reminds the journeyman of what he is supposed to be teaching. It provides a basis for better performance evaluations because people are evaluated on the basis of their ability to perform specified tasks. It encourages active rather than passive learning on the part of the apprentice, which goes a long way toward establishing the apprentice's credibility and potential for success in the eyes of an otherwise skeptical journeyman. Finally, it can provide the apprentice with some clear indicators of progress, or lack of it, so he or she can try to improve. If necessary, it provides management with some defensible indicators for disqualifying an apprentice who is clearly not mastering the necessary tasks. Finally, it gives journeymen the reassurance that equity and competency are both concerns of management.

These general concerns about the changing work force and the increasing need for more formalized approaches to training, especially from an affirmative action point of view, as well as a commitment to locally designed and implemented programs that are developed within the parameters of existing union agreements, underlie our experimental efforts at GM. I cannot overstate the importance of locally designed and implemented programs in creating a context in which all apprentices, but especially women and members of minorities, can become competent.

## The Experience to Date

In the fall of 1978, a series of in-plant interviews were conducted in the context of a number of pilot projects on women in nontraditional jobs at General Motors. Interviews and conversations about the skilled trades in two GM divisions revealed a high level of frustration among women apprentices and skepticism among supervisors and journeymen about the potential of women to be good tradespeople. There was a general feeling that women had been recruited into the trades regardless of their potential, and that women didn't have to be competent or become competent because their jobs were virtually assured because of government pressure. The women on the other hand reported great difficulties in getting training from journeymen and expressed the feeling that information and opportunities for hands-on experience were denied them. These comments in the GM divisions were not unlike those in other industries at other locales that, like GM, have been making the first steps towards moving women into the trades. GM has a deep commitment to improve both the numbers of women entering and the numbers completing apprenticeship programs. The early interviews probed on-site people for ideas on how to improve overall training and evaluation in order to help women become better journeymen. However, it became clear that people felt apprenticeship training overall needed to be improved.

What is known in the literature as competency-based or performance-based instruction is an idea often stated in common sense terms. In fact, in each of the two divisions where initial interviews were conducted, there was an example of a plant superintendent who, on his own, had devised task-oriented, competency-based training guidelines that specified what should be mastered by an apprentice in a given area within a given number of hours. What was important in both of these situations was that the formalization happened somewhat spontaneously and as a direct reaction to the changing character of incoming apprentices. There was a felt need for more formalized training, for which plant superintendents took the initiative. What we did was to take this idea, define it in terms that were generally understandable, and translate it into a process that was workable at a local level. AC Spark Plugs decided to build on this idea and is introducing a locally designed competency-based program in the electrical, tool and diemaking and modelmaking trades.

### The Setting

The setting at AC Spark Plugs is ideal for such a collaborative and participatory effort. Lines of communication between labor and management are open, and union representatives work side by side with personnel representatives in the recruitment and screening phases of the apprenticeship program. In addition, the responsibility for the implementation of apprenticeship training is decentralized and operated from the office of the plant superintendent. This means that a smaller number of apprentices are tracked and rotated by a manager than would be the case if a single person were responsible for division-wide monitoring of apprenticeship as is the case in many settings. At AC, superintendents know their apprentices and work closely with floor supervisors. The personnel office and apprenticeship coordinator maintain a backstage position once apprentices are assigned to the floor. AC is also a place that was ready for a reevaluation of the overall apprenticeship program at the time we began looking at the particular problems of women. This mean that there was a readiness to do a self-analysis and try some new approaches. Finally, there had already been a few successful women at AC. They made it very clear that helping women make a better impression when they first hit the floor and developing techniques for helping them learn their jobs and to act more assertively would be essential to the future success of women. Because these women had succeeded and were respected for the most part by their male co-workers, their comments were taken seriously.

## The Plan

Within this context, it was relatively easy for personnel and labor relations people to facilitate a trial approach to training that was competency based. It was agreed that the major difficulties for women were: (1) making a good first impression on the floor; (2) coming across as active learners; (3) getting more direct help from journeymen; and (4) getting regular feedback on performance of specific tasks. A series of meetings between supervision and journeymen was then called, in which the following steps were taken:

1. The concept of competency-based training was introduced to key staff and benefits to employer and employee, men and women alike, were discussed.

2. Supervisors and journeymen collaboratively identified terms, concepts, tasks, skills, and competencies to be acquired within the allotted hours spelled out in the UAW Contract. These were categorized according to work area and sequence.

3. Check lists, forms or booklets (whichever was best suited to the particular trade and work setting) were prepared for purposes of communicating to all apprentices, journeymen, and supervisors what would be learned and when.

4. These check lists, forms, or booklets were reviewed by appropriate union and labor relations representatives.

5. New materials and the new approach to training were introduced by superintendents to all floor supervisors and by supervisors to all journeymen.

What is critical about the process just identified is that, although its inspiration came from personnel, the design, introduction, and implementation of the new approach were entirely in the hands of plant management and journeymen. Unburdened by learning models and jargon, the forms were theirs, designed to their specifications. They do not constitute a system imposed from the outside that is overly complicated, detailed, or difficult to relate to their context.

In the fall of 1979, the first new apprentices in modelmaking and the electrical trades were introduced with the new system, and the tool and diemakers are soon to follow. Reactions thus far are, therefore, highly subjective, and there is no statistical data as yet to substantiate the impact of this more formalized approach to training on either the retention of women or on the general morale of the working men and women who are having to adjust to the transition of women into nontraditional blue-collar jobs.

## Preliminary Findings

Based on a recent series of interim evaluation interviews at AC, there are a number of things that seem to have happened as a result of the introduction of competency-based training. To begin with, for the all too often overlooked skilled blue-collar worker, the simple fact that a study was conducted and efforts made to understand and improve the quality of apprenticeship training had a positive impact on morale. It is the old Hawthorne effect in one sense: any show of interest in a work group has positive effects. More important, the concern with competency created a common goal that pulled management, labor, and equal employment opportunity officers together. Everyone is concerned with competency, and in the process of addressing the issue of how to assure competency in apprentices a number of other themes could be introduced in a less antagonistic context. What followed from this was improved communication, because the process of designing competency-based materials catalyzed discussion between people who previously saw themselves as having no common interests.

In addition to the positive effects on existing employees, many journeymen reported more initiative among the new apprentices. Apprentices now had a roadmap. The women interviewed also seemed more confident and expressed feelings of security with regard to knowing what was expected of them in the first two years. Finally, many of the journeymen seemed more mellow because they felt there were finally some criteria by which management could fail women and members of minorities who were not "cutting it." They generally had the perception that things were a little bit fairer than they had been a year earlier.

People have identified weaknesses in this first effort as well. The journeyman is the trainer but the supervisor does the performance evaluations, and so there was some concern that evaluations may not be realistic, comprehensive, and fair. There is a need to update evaluation forms to match the training program more accurately. The participatory character of the programs means that some evaluation materials are more clear and useful than others. Also, more teaching materials need to be developed in some areas, and a better job of introducing them and demonstrating how to use them may be necessary.

In the first six months of this pilot program morale is up, expectations seem clearer, and people with problems are being identified and helped or are seeking help on their own. People are getting a better chance to learn their job than they reportedly were prior to the more formalized system. In a world where paperwork is the constant complaint of supervisors, the new forms and checklists are not defined as a burden--most probably because they reflect local concerns and local solutions. How all of this will progress over time remains to be seen. With time, evaluation scores, attrition data, journeyman and apprentice satisfaction, and specific complaints will be tracked and analyzed. Even though the program has operated for a few months only, I would like to venture a few ideas that might be transferred from this experience to the trades in general.

## Duplication of Results in Other Contexts

The experience at AC is one that probably can be duplicated throughout General Motors Corporation and throughout the skilled trades in this country. This is because what has happened at AC represents a process that can be adapted to any context. The actual content of the checklists--the competencies spelled out for training and evaluation--are less important than the core notion of a competency-based model that derives from the input of trainers and workers at the site in a specific trade in a specific industrial context. The following steps in the process of developing a competency-based program are critical:

1. Develop an understanding within skilled trades management and work groups of the value of more task-oriented, competency-based specifications of what apprentices should accomplish during their on-the-job training. Advantages of such specifications include:

    a. clarifying and objectifying expectations; this has positive implications for affirmative action because there is less room for bias in performance evaluations;

b. providing supervisors and journeymen with some clear standards against which to evaluate performance in order to improve overall training; this will help supervisors identify specific areas where additional improvement is needed and provide defensible grounds for disqualifying an apprentice if performance isn't acceptable;

c. creating a context in which an apprentice can be an active learner; this improves overall learning as well as the impressions women and members of minorities make on the job.

2. With input from supervision and journeymen in particular trades within particular industrial settings, specify area by area the baseline knowledge and information a person needs to do his or her job and the specific tasks and competencies the person should have at the end of his or her specified hours in that area.

3. Design a booklet, form, or plan spelling out the competencies (in sequential order, if appropriate).

4. Introduce these materials to journeymen and supervisors on the floor and orient new apprentices prior to floor assignment as to what they may expect throughout their apprenticeship.

5. Transform classroom instruction (in terms of sequencing, timing, and expectations) to complement the character of the competency-based, on-the-job training.

6. Develop evaluation forms and procedures for interaction between journeymen and supervisors that are based on competency rather than attitudes and work habits.

The value of this process is many-sided; everyone stands to gain. Situations in which there is less ambiguity are situations in which women and members of minorities do better because it is more difficult to discriminate unfairly. On the other hand, disqualifying people is easier where competencies are clearly spelled out and contain no inherent biases. All levels of the organization are involved in spelling out performance expectations, which means that everyone "owns" them. The process also allows for adapting training and evaluation to the peculiarities of particular trades in particular settings; programs can be tailor-made and thus more relevant and acceptable. It also allows for expectations and criteria to be changed as technology and procedures change.

A more rigid trade-wide or corporation-wide approach runs the risk of watering down important expectations and criteria to the point where they are so general or ambiguous that they benefit neither the employer nor the employee. The approach at AC suggests that at times there really are "win/win" solutions to problems. Both the concern for productivity of business and the concern for job security and advancement of the worker, even the female worker, are served by a process that spells out training and performance expectations in a participatory manner.

# CHAPTER VII

# INNOVATIONS IN THE APPRENTICESHIP INFORMATION SYSTEM

# INNOVATIONS IN THE APPRENTICESHIP INFORMATION SYSTEM

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## Introduction

### Public Perceptions of Apprenticeship

Despite decades of effort by the U.S. Department of Labor and various state agencies to promote apprenticeship, there remains a pervasive ignorance among the general public in America regarding apprenticeship. Even those who have heard of apprenticeship have major misconceptions about it.

Some think apprenticeship is an obsolete form of training no longer practiced. In fact, the apprenticeship system currently has more than 300,000 American workers in training. In some trades, apprenticeship offers the most modern and best quality training available in America.

Some consider apprenticeship to be an informal or loose mode of training in which a young person learns on the job under the guidance of a master craftworker. In fact, today's apprentices work under formal training programs that specify work processes and rotation schedules so that apprentices learn all facets of the trade. Almost all apprenticeships also require supplementary related instruction in a classroom.

Some think that all apprenticeship programs are the same and that the apprenticeship system is homogeneous. Actually, there is considerable variety among programs. Each program has its own jurisdictional area, selection methods and criteria, starting wages, techniques of job dispatching, credit provisions for prior experience, and so on. Moreover, some programs attract huge numbers of applicants whereas others have difficulty finding sufficient numbers of qualified candidates.

Some think that apprenticeship programs are union programs. In fact, over 80 percent of apprenticeship programs are sponsored unilaterally by employers. Not a single apprenticeship program is sponsored exclusively by a union. Certainly several unions have been strong supporters of apprenticeship, but whenever they are involved as sponsors of apprenticeship, unions work jointly with employers.

Some view apprenticeship to be a closed system that is reserved largely for sons and nephews of current craftworkers and discriminates against minority applicants. In fact, fewer sons are following in their fathers' footsteps in the trades and the proportion of relatives working in most apprenticeable crafts is probably no larger than that found in many occupations. Further, over the past dozen years, in response to affirmative action pressures and with the help of special outreach efforts, apprenticeship has made great strides in including members of minorities. By the end of 1978, 18.2 percent of apprentices were members of minorities.

Public ignorance regarding apprenticeship is compounded by inadequate career counseling in school. Few school counselors have any familiarity with apprenticeship. Information on apprenticeship is not a part of any regular curriculum for training school counselors. Further, the attitudes of school counselors tend to reflect our society's bias against manual work and in favor of college education. Thus, better students who could make excellent apprentices are steered away from working in apprenticeable trades and towards college.

The low level of public awareness of apprenticeship affects apprenticeship in at least three ways:

1. Government action detrimental to apprenticeship can be taken with public support or at least without public opposition. This makes apprenticeship more vulnerable over the long run.

2. Promoting the expansion of apprenticeship among new industries, occupations, and employers is more difficult because misinformation has to be corrected.

3. Many apprenticeship programs fail to attract good applicants, and almost all programs lack sufficient numbers of qualified minority or female candidates. Further, many persons who do apply are unaware of what they are getting into or lack the motivation and qualifications to do well.

## Information and Recruiting Programs

In response to this third concern, the U.S. Department of Labor has taken several initiatives to help assure that information regarding apprenticeship is more widely available. In 1964, special units called Apprenticeship Information Centers (AICs) were established through the public employment service in several major metropolitan areas. These centers, currently operating in just over 40 cities, exhibit a wide variation in the level and quality of service they offer. With a few important exceptions, they have been passive providers of information on apprenticeship opportunities for individuals who walked or called in.

The Apprenticeship Outreach Program (AOP) has traditionally been directed at recruiting male members of minorities and coaching them through the apprenticeship entry process. This program is modeled after a project pioneered by the Workers Defense League in New York City in 1964. Replicated with Labor Department national funding beginning in 1967, apprenticeship outreach programs have been established by various community organizations in more than 100 cities across the country. More than a decade later, following the promulgation of goals and timetables for women in apprenticeship, formal goals for placement of women have been required of apprenticeship outreach programs.

U.S. Department of Labor funding has also been directed at various unions and employer associations to establish preapprenticeship programs and on-the-job training projects aimed at preparing minorities and women for apprenticeship.

During the late 1970s several additional outreach and apprenticeship programs of various designs were initiated under local funding from prime sponsors under the Comprehensive Employment and Training Act (CETA). These projects have the objective of increasing the participation in apprenticeship of economically disadvantaged women and members of minorities.

For several decades the U.S. Bureau of Apprenticeship and Training and various state apprenticeship agencies have been promoting interest in apprenticeship among potential applicants. Most recently, a series of public service announcements was begun in selected cities in a campaign to attract more women to apprenticeship.

While such efforts have brought increasing recognition to apprenticeship and have made significant strides in bringing apprenticeship to the attention of members of minorities and (more recently) women, the proliferation of programs, initiatives, and campaigns, along with dissatisfaction with the quality of available applicants, has led industry apprenticeship officials to support the concept of a central agency for handling information and intake for all apprenticeship programs in a locality. This support has provided part of the impetus for the apprenticeship opportunity center project described in the remainder of this paper.

## Origins of the Apprenticeship Opportunity Center Concept

The idea of establishing one-stop apprenticeship opportunity centers first surfaced as a recommendation in a 1975 report by Sol

Swerdloff commissioned by the Federal Committee on Apprenticeship (FCA), which is the key national advisory body on apprenticeship to the secretary of labor.[1] Swerdloff interviewed various apprenticeship officials across the country, seeking possible improvements in the apprenticeship system. One recommendation made as a result of that survey was a call for experimentation with area-wide apprenticeship registration centers in metropolitan areas. Such centers, which came to be called "apprenticeship supermarkets" or Apprenticeship Opportunity Centers (AOCs), would offer a single site where applicants for all local apprenticeship programs could be processed in one stop, rather than spending considerable time traveling from one program office to another and taking up program administrators' time at each location. Because the suggestion had also arisen independently from several well-informed industry representatives, the FCA saw sufficient merit in the idea to recommend a feasibility study.

The Office of Research and Development of the Employment and Training Administration of the U.S. Department of Labor contracted in June 1977 with the Center for the Study of Human Resources of the University of Texas to perform such a feasibility study. Based on the positive findings of the study, delivered in July 1978, a decision was made to proceed with a demonstration of the Apprenticeship Opportunity Center concept in two sites. In Portland, Oregon, the existing Apprenticeship Information Center would be upgraded, with federal funds, to an Apprenticeship Opportunity Center. Two professional staff members would be added. The Human Resources Development Institute of Houston, Texas, cosponsor of the Apprenticeship Outreach Program in that city, would be granted a subcontract to begin an Apprenticeship Opportunity Center. The Portland program began in May 1979 and the Houston program got underway in September 1979. The present study offers a mid-course status report on the two projects.

The appeal of the AOC concept stemmed from its potential for providing a centralized intake and prescreening service that would result in savings of time and money to applicants and program administrators alike. Apprenticeship coordinators, especially, could avoid the problems of dealing personally with large numbers of applicants, many lacking the qualifications or the interest in skilled manual crafts required of apprentices. In addition, the AOC offered the potential to: improve the quality of counseling available to applicants; assist in the promotion and development of new programs; improve the quality of applicants referred to lesser known apprenticeship programs; rationalize the flow of applicants to individual programs; facilitate the work of apprenticeship outreach programs; and raise community awareness of apprenticeship.[2]

## Development of the AOC Demonstration Project

### Site Selection

AOCs are appropriate and acceptable only to certain localities. Criteria used to select demonstration project sites were: apprenticeship openings of sufficient quantity and diversity; extensive cooperation among the trades; and interest on the part of the local apprenticeship community in demonstrating the AOC. A metropolitan area of medium size seemed most suitable.

These selection criteria were applied to about 20 cities suggested by various knowledgeable individuals interviewed during the feasibility study. One city--Houston--was suggested most often by national officials. Local training directors in Houston also were receptive, even enthusiastic.

In part due to budget constraints for the project, Portland, Oregon, was recommended as a second site. Beginning in 1970 the Portland Apprenticeship Information Center (AIC) had gradually evolved into a central intake facility for thirty-nine trades. By providing supplemental resources to upgrade the Portland AIC to a full Apprenticeship Opportunity Center the one-stop concept could be examined at two sites at minimum expense.

The two sites selected offer some similarities and contrasts that will be helpful to the demonstration. They both currently have robust economies, a fact that is extremely important to a fair trial of the AOC concept. At both sites the percentage of construction-related apprenticeships reflects the national figure of 60 percent (55 percent in Portland, 66 percent in Houston).

Portland, which is under a State Apprenticeship and Training Council, has only 2,733 apprentices in 74 registered programs. Houston, a BAT administered site, has 7,662 apprentices in 351 programs. Houston is characterized by several large petro-chemical programs and a great number of small service industry and light manufacturing programs. Fourteen percent of the Houston programs (i.e., the fifty largest programs, which include the 34 construction programs) account for 94 percent of the apprentices. In Portland, the construction programs alone account for 40 percent of the programs and the remaining programs are dominated by medium sized (15-20 apprentices) manufacturing programs.

## Sponsoring Organizations: Who Should Operate the AOC?

Any contractor selected to operate an AOC must be able to deal with local apprenticeship programs on a basis of respect, trust, and cooperation. This generally implies the choice of an existing organization with a record of good performance and a relationship of trust with the trades. The particular choice of a contractor in any area must be made in the context of local conditions.

The selection of particular subcontractors may be hotly contested, since there are at least five major categories of agencies who could conceivably sponsor an AOC. These include community organizations involved in apprenticeship outreach (e.g., the Urban League, Recruitment and Training Program Inc., the Human Resources Development Institute of the AFL-CIO); Apprenticeship Information Centers (operated by the public employment service); local organizations of apprenticeship directors; government agencies dealing with apprenticeships (e.g., the Bureau of Apprenticeship and Training, state apprenticeship agencies, vocational training schools).

For the demonstration project it was decided that sites would be operated by different agencies so that the advantages and disadvantages of each type of agency could be assessed.

## Research Design

The goal of the research design for the project is to assess both the feasibility of the AOC concept per se and methods of implementation of that concept. The AOC must deliver needed services, so the demonstration project cannot be subjected to a rigorous, controlled, and highly structured evaluation that would jeopardize services. Rather, the research design must reflect several considerations. First, the success of the demonstration is not in the control of any one person or organization but is dependent on a high level of cooperation among many individuals and organizations. Second, the AOC must be sufficiently flexible in its ability to adapt to the diverse needs of the apprenticeship programs and applicant population it serves. Third, many judgments will have to be based on short-term indicators rather than long-term results, because the demonstration will only operate for eighteen months.

Data are being gathered through observation, interviews, and document review. Observation is being used to determine the effects of exogenous events, the informal roles and relationships of individuals and organizations. Interviews are being used to establish the base-line for all unquantifiable data and to measure progress from these base-lines. Again, the nature of the demonstration necessitates reliance on the subjective views of the participants and observers to establish the impact of the AOCs on apprenticeship intake. This is especially true for the Portland center, because implementation took place prior to formal assessment. Document review consists of comparing information specific to the demonstration period with base-lines established from other sources.

The research staff is required to preserve a record of all relevant events in order to provide as objective a trial as possible. If this objectivity is doubted, the proper recording of events may still be subjected to the explanation, interpretation, or specification of another evaluator. Research staff must anticipate the information needs of future evaluators and ensure that the information collected is accurate and useful.

The research component preserves the integrity of the AOC concept because objectives are kept firmly in view. Research staff provide continuous feedback, thus improving the program as they observe objectively. Though the roles of evaluator and mentor may conflict, they are not irreconcilable as long as the researcher is conscious of the roles and keeps them separated. However, this dual role limits researchers to a process evaluation; researchers who have administrative responsibilities cannot be given the responsibility for the final evaluation without raising the specter of conflict of interest.

## The Experience in Houston

As of April 1980 the Houston Apprenticeship Opportunity Center had been open for approximately eight months. During that time the AOC served over 2,200 applicants, with volume gradually increasing. Since the demonstration will continue through November 1980, it is possible at this stage to present only tentative conclusions. The present paper constitutes an interim examination of the center's progress in meeting ten key objectives.

The first objective was that all participating apprenticeship programs transfer the burden of answering general inquiries, explaining their trade, assembling applications, and testing applicants to AOC staff to perform exclusively. In practice, this goal was soon found to be unrealistic. For a variety of reasons, only a few programs proved initially willing to sign agreements allowing the AOC to provide a full range of services to all potential applicants. Some trades decided to postpone using any of the AOC's services until it had proven itself. Others wanted the AOC to take certain stages of the application and screening process off their hands while retaining internal control of other stages. Several training directors wanted to retain internal control over application and screening because of EEO considerations. They felt that they would be held responsible for what the AOC might or might not do. Some local program administrators, and not a few of their national leaders, were apprehensive about participating in any government sponsored program dealing with apprenticeship entry. Other administrators did not want to delegate authority to an outside organization because their programs were undergoing revision of entry procedures and standards at the local or national level.

Several misperceptions appear to have figured in at least some of the initial reservations evidenced on the part of program agents. First, many program operators (and especially JAC committee members and business agents) were uncertain as to what the AOC would prove to be. Some feared that entry standards would be lowered or that they would not be selecting their own apprentices. In addition, almost all nonunion programs were hesitant to participate in the program, learning that it would be union-oriented.

Many training directors initially expressed ambivalence as to what the AOC would mean to them in personal terms. On the one hand, staff would be relieved of a great deal of tedious labor; on the other hand, they would lose a certain amount of close personal contact with prospective apprentices.

The geographical territory to be covered by the AOC presented a complicating factor in the potential provision of services. The trades operating in the Houston area display an enormous variety of jurisdictional boundaries--from programs operating within one area of Houston to programs covering several states. The projected savings in time and energy was necessarily smaller for programs with wider jurisdictions because these programs would have to maintain enough staff to serve applicants from outlying locations.

The AOC staff has handled all these responses with an emphasis on flexibility and accommodation to the trades. This stance has met with a positive response from the parties involved: a few programs that were reluctant initially are now using the AOC; others that originally used minimal services have moved to a level of greater reliance. In both cases, the services have often been provided with no written agreement at all; requests for referral services have been accompanied by the granting of access to information on the disposition of each referral.

However, pressure is being applied to the trades because there is a fear that the AOC will not be able to fulfill its intended role if it is not a sole source. This fear arises from indications that the rate of application is leveling off and that the quality of the applicants, according to three measures, is decreasing. These measures are: the percentage of applicants with education or training beyond high school, the percentage who are employed full or part time, and the percentage who keep appointments for testing or interviews. It seems that those trades that are not using the AOC for all of their referrals are maintaining a parallel application process that the more knowledgeable and motivated applicants use because it is more direct. As long as this route is open to applicants, the AOC cannot be identified as the centralized intake point.

The second objective was to serve all programs equally. At this stage, the substantial majority of cooperating programs are from the joint construction trades, although there are a few small programs served by the AOC that are exceptions to the pattern. There are several interrelated factors that have contributed to the present situation. One is clearly historical: several of the building trades programs have been enthusiastic proponents of the AOC concept since the earliest investigations of the feasibility study. At one point a group of them considered applying to be sponsors of the center themselves through their local chapter of a state training directors' organization called the Apprenticeship and Training Association of Texas (ATAT). Naturally, the organization that did ultimately receive the contract to operate the center (HRDI) enlisted the cooperation of these willing programs as the first participants in the AOC operation.

In addition, the joint building trades programs are more organized, homogeneous, and accessible than other programs. The AOC sponsors made an early decision to provide adequate services to this part of the community first, rather than overextend themselves in the first six months of operation. The initial emphasis on jointly sponsored apprenticeship in the building trades was never intended to be an exclusive focus of the AOC, however, and the staff is at present making efforts to broaden the range of participating apprenticeship programs. The AOC runs the risk of being identified as a union program, both because of the organization that sponsors it and because of the nature of the trades it has dealt with to date. The AOC will have to alter this perception if it hopes to broaden its base by the end of the demonstration.

A related problem is that half of all apprentices outside of construction are in manufacturing programs that effectively accept aplications only from a restricted pool of current employees. Since most of these programs do not need referrals from outside their plants, there is little incentive to use the AOC. This situation is only now beginning to be addressed by the AOC, and it may be that some adjustments can be made in order to serve these programs; alternatively, it may be determined that the AOC cannot be expected to serve apprenticeship programs that recruit exclusively from among restricted pools of existing employees. The level of involvement by the nonconstruction programs will ultimately have to be judged in light of the available population: currently, about 36 percent of registered apprentices in the Houston area are outside the construction industry, and slightly more than half of these are selected from restricted pools. The remaining half of the apprentices outside of construction are in very small programs that average two or three apprentices. Further, the largest programs that recruit from within are located at the fringe of the SMSA.

The third objective was to save time and expense for administrators of apprenticeship programs. It is difficult to document this because programs use the AOC to differing degrees. Furthermore, apprenticeship directors and their staffs spend their time on a variety of activities not related to application for apprenticeship, and none keep records of time expended or saved by category. Nevertheless, the uniform response of participating administrators to date has been that the AOC has substantially reduced their burden of paperwork and informational activities; savings are cited both for the application and testing process and for the task of answering telephone and written inquiries.

There are two areas in which anticipated reductions in time and expense have not taken place. First, apprenticeship directors have wanted to be relieved of the burden of wasting time on unqualified applicants. The AOC has been able to deflect approximately 3 percent of applicants away from all programs as not meeting any program's minimum qualifications. However, there appears to be a filtering down process: applicants who do not meet the qualifications of one program apply to another program whose qualifications they do meet. This results from the responsibility felt by AOC staff to help as many of the applicants as possible. This process may increase the number of marginally qualified applicants referred to the programs with lower entrance requirements. Further, by providing a visible centralized intake point, the AOC may generate larger quantities of qualified applicants and thus increase the number of people apprenticeship committees must interview. In Houston, this may be welcome, since one complaint is that there has not been a sufficient pool of qualified candidates.

A second area where reduction in time and expense has not taken place is in publicizing openings in apprenticeship programs. Because of apprehensions on the part of the trades and the AOC staff as to legal requirements for notification, programs are still publishing public notices and sending letters of notice to interested groups. Given this fear, every effort is being made by the AOC to have its name and address put on the announcements as the application and information source. The direct association of the AOC with jobs, not just information, should contribute greatly to establishing the AOC as the centralized intake point for apprenticeship.

The fourth objective was to save time and expense for apprenticeship applicants. It is too early to fully assess this objective. To date, many of the AOC's referrals have come from program coordinators who are using the AOC's services. Once the applicants begin to flow directly to the center, they can be interviewed about their experiences.

The fifth objective was to save time and expense for apprenticeship outreach efforts by reducing referral paperwork. Although both apprenticeship outreach and the AOC project in Houston are operated by the same national sponsor, the relationship between the two units has not been altogether smooth. Definitions of roles are needed to ensure coordination and eliminate duplication of services. The two programs have also vied for credit for service to applicants, the trades, schools, and other institutions. National HRDI is making a concerted effort to demonstrate an ideal relationship between the two programs and has recently moved the AOP to a location only a few blocks from the AOC. This will be a convenience for female and minority applicants. After lengthy discussions, the AOC has agreed to inform female and minority applicants of AOP special services, and the AOP will refer persons to the AOC when they are ready to apply for apprenticeship. The AOP will concentrate on tutoring, outreach, and support activities for its target groups and give up its apprenticeship application and liaison functions.

The sixth objective was to become the centralized apprenticeship information source--to raise community awareness and make the needs and standards of apprenticeship more widely known. The AOC is on the road to fulfilling this objective. The trades themselves are anxious for the AOC to assume this function, and many program offices now tell all telephone callers to contact the AOC to answer their questions.

Presently, the AOC is compiling a directory of information. This will be made available to school districts and community-based organizations for use by counselors and other staff. Initial contacts have elicited a favorable response from the largest Houston school district. A radio and television spot announcement has just been completed that will inform a larger audience of the availability of apprenticeship programs in Houston and of the existence of the AOC as a source of further information about them. BAT is now airing a public service announcement geared specifically to women; respondents will be referred to the AOC by cooperative arrangement between the two agencies.

As community awareness of the AOC has increased, so too has the volume of inquiries from potential applicants and other interested groups such as educational institutions. As the AOC begins more aggressive apprenticeship promotion efforts, its function as a central information point will become more important, both for the trades and for the community.

The seventh objective was to balance the flow of aplicants to the various apprenticeship programs. Of all the original goals for the AOC concept, this is the one whose attainment seems least feasible given the experience in the first half of Houston's demonstration project. To a degree unanticipated in the feasibility study, participating program sponsors in Houston have proved acutely sensitive to any hints of AOC steering potential applicants away from one program to fill the needs of another. When asked the greatest pitfall the AOC might encounter in winning the confidence of the apprenticeship community, the training directors almost unanimously cited the danger of its being perceived as attempting to balance the flow of applicants by tampering with the original desires of qualified applicants. However, some apprenticeship coordinators expected, unrealistically, that the AOC would recommend only the best applicants for referral to their programs. In fact the AOC is limited to using only the minimum qualifications set forth by each trade.

The AOC staff has been careful to avoid these pitfalls, and suspicion on this score appears to have subsided. The existence of these fears does mean, however, that any increase in qualified applicants for programs reporting shortages (as well as for new programs just getting established) will have to come from absolute increases in the number of applicants, since the AOC cannot direct individuals to apply for less popular programs. The AOC can affect decisions indirectly by providing realistic information on the chances of acceptance in various programs and by presenting objectively the available alternatives within the applicant's range of interests. Further, experience at the Houston AOC has already proved that applicants who are refused entry to the program of their choice frequently return to the AOC for referral to other programs.

It now appears that the AOC will be effective in generating a consistently larger pool of applicants for apprenticeship, and this is expected to benefit programs reporting shortages. Fortunately, demand for apprentices in Houston for all trades is still expanding, despite economic downturns elsewhere, and is predicted to remain at a high level for the remainder of the AOC demonstration period.

Concerning the eighth objective, which was to improve counseling for apprenticeship applicants and raise retention rates, progress appears mixed, although expectations may have been unrealistic in the design phase. Certainly, counseling that harried training directors did not have time to offer is being provided now. However, time constraints operate on AOC staff as well; staff must limit the attention given to individual applicants in order to keep the overall work load (and applicant waiting time) within acceptable limits.

Originally, it was contemplated that the General Aptitude Test Battery (GATB) would be used as a counseling tool in assisting an applicant's choice of craft; this has proved to be too time-consuming. Fortunately, a high percentage of applicants have already decided upon a trade prior to seeing the AOC counseling staff, but as outreach efforts make the AOC more visible, the proportion of undecided applicants is likely to increase.

One goal of counseling is to produce apprentices with a realistic picture of the requirements of their chosen craft and a considered committment to their training. By improving the size of the qualified applicant pool and by providing counseling on the realities of apprenticeship prior to application and indenture, the AOC should produce apprentices who are better motivated and better suited to their crafts. This should eventually be reflected in lower rates of attrition for apprentices who enter their apprenticeship through the AOC. However, data on retention of individuals placed by the AOC are not yet available in Houston.

The ninth objective was to demonstrate the flexibility and utility of an AOC in meeting specialized needs of the apprenticeship community. The creation of a centralized Apprenticeship Opportunity Center in Houston appears already to have encouraged the development of several fledgling programs. Three new programs in occupations not traditionally served by apprenticeship have solicited the AOC's help directly, and their agents have uniformly expressed the view that the availability of the AOC's services could make the difference as to whether their new program is able to get off the ground. Without the AOC these programs would have to handle applications and program supervision with part time or volunteer staff.

As had been hoped in the planning stages, the AOC has begun to serve as a catalyst for exchange among local organizations concerned with apprenticeship. The level of positive response from the community indicates a need for this catalyst. Groups that previously had little contact are now meeting regularly together as members of the AOC advisory board; included are BAT, AOP, Employment Service, CETA, community-based organizations, and training directors from a variety of crafts.

Organizations that have had difficulty working together in the past have been brought together. For example, the Texas Employment Commission (TEC) had sponsored an Apprenticeship Information Center (AIC) in Houston that closed due to lack of success in building linkages with the major apprenticeship programs. Now TEC and the AOC sponsor have worked together to open the new AOC; the TEC area director was the AOC's first advisory board chairperson and was instrumental in working out a favorable arrangement for administering GATB testing on the center premises. In addition, BAT and HRDI local staff have begun meeting separately on a variety of issues, and this has helped them iron out some long-term misunderstandings. Similarly, a representative from the YWCA on the AOC advisory committee has proposed a preapprenticeship project for funding from the local CETA sponsor, the director of which is also on the council. Subcommittees of the advisory board have been appointed to assist the AOC in public relations, in liaisons with secondary schools, and in enhancing communication among diverse institutions in Houston's apprenticeship community.

Objective number ten was to increase recruitment of female and minority applicants and to help programs having difficulty locating qualified female and minority applicants. Although the AOC is not intended to be a targeted program, initial interviews with apprenticeship training directors clearly indicated that they hoped the center would generate larger numbers of qualified female applicants for their programs. All the Houston trades have had difficulty meeting their goals for female indentures, and several programs have expressed the belief that the existence of a centralized intake, counseling, and referral center would make apprenticeship more visible and more accessible to women. Whether or not this expectation will be realized cannot be judged at this time, since active outreach and promotion in the community at large are only now getting under way.

Many of the factors that affect women also affect members of minorities, with some modification. The Houston trades have experienced more success in recruiting qualified members of minorities for their programs; the issue has been addressed over a longer period than that of women, and over that time a number of vehicles to facilitate minority goals have come into existence. These include not only special outreach and support programs, such as the AOP, but programs operated by the trades themselves. Programs directed at women are only now getting started.

## The Experience in Portland

The Portland Apprenticeship Information Center (AIC) began centralizing apprenticeship intake functions in 1970. Impetus came from the State Apprenticeship and Training Council, the AIC staff, and management and labor representatives involved in apprenticeship. The step was taken to simplify the intake process so that members of minorities would have easier access to apprenticeship. It soon became apparent that the centralized intake was providing advantages to apprenticeship programs, applicants, and the general public, as well as to members of minorities. These advantages have been monitored and analyzed and have become the general objectives for the AOC demonstration project. Because the general objectives have largely been met in Portland and have been used to define expectations in Houston, much of the Portland demonstration has been focused on a more limited set of objectives that addresses community awareness of apprenticeship. The general objectives are still being monitored in Portland for effects of time and for insights that might apply to other AOC sites.

With regard to the effort to provide all services appropriate to the AOC concept to all registered apprenticeship programs, 39 of the 41 major apprenticeship programs in the Portland area currently use the Portland AIC. It is the central intake point, where applicants are counseled, tested, their documents collected, and applications completed. Programs with fewer than five apprentices or with special application procedures (e.g., police, inhalation therapy) generally do not use the AIC's services. A few programs use a modified procedure that may include, for example, filling out a separate application at the committee's offices. The reason for the modified procedures reportedly is that the programs want closer identification with the application process either to develop loyalty or to feel they have some control prior to the interviews.

Three rules for the apprentice selection procedure, which were adopted in 1967 by the Oregon State Apprenticeship and Training Council to implement Title 29 CFR 30, made centralization feasible and attractive to the programs. They are: uniform applications shall be made available at one central point; all application blanks shall carry a serial number so that they can be accounted for; there shall be a book or form in which each line carries a number corresponding to the serial number of an application. Columns shall be provided to show the progress (by dates) and final disposition of each applicant.

These rules applied to each program individually--that is, each program was to have a central intake point, but not necessarily the same point. The effects of the rules were that they brought some uniformity to selection procedures and they presented a common solution to the problem of providing up-to-date information for all participating programs. The key to establishing the AIC as a common provider of service to the major trades was bringing the trades together for a constructive purpose and reducing the diversity of their selection methods.

All apprenticeship programs in the state of Oregon must announce their opening dates through the State Apprenticeship and Training Council. As part of the council's statewide announcements, the Portland AIC issues a bulletin for virtually all the trades in the area, specifying that application must be in person at the AIC. This firmly establishes the AIC as the source of apprenticeable jobs.

Concerning the objective to serve equally joint, nonjoint, construction, nonconstruction, group, and individually sponsored programs, the AIC had to be sensitive to program differences and rivalries and to be patient while proving its objectivity. The AIC staff maintains its impartiality by presenting the applicant with only those materials and information used by the programs themselves and refraining from making subjective statements about the programs. The AIC staff allows the applicant to choose on the basis of working conditions, wage rates, fringe benefits, hiring dates, and past acceptance ratios. But most important, the AIC has convinced the program committees that they are impartial.

Manufacturers' programs that hire apprentices from among their own workers have asked the AIC to test and assemble the documents for the applicants. They have found that the AIC's impartiality and third-party status have greatly reduced challenges to the selection process from rejected apprenticeship applicants.

As for the objective of saving time and expense for administrators of apprenticeship programs, the Portland AIC has become the model and standard for defining the amount and kinds of time and expense that can be saved by this kind of program. However, some long-range implications for savings of the AOC project deserve particular recognition.

As the Portland AIC has become the centralized apprenticeship information source and has developed linkages with other employment and training agencies, and as it has participated in outreach efforts to women and members of minorities and helped to develop new programs and perform trade-specific recruiting, the number of applicants has gone steadily upward at a rate of approximately 20 percent per year. More important, the number completing the application process and being referred to program committees for interview h.s gone up 55 percent in the last year.

Thus, the AOC has produced ever increasing numbers of applicants by fulfilling its function as a labor market facilitator. Moreover, as the quality of the information about apprenticeship has improved, the number of qualified and motivated applicants being referred to the programs has increased at a faster rate than the number of applicants in general. While apprenticeship administrators have been spared much of the task of handling paperwork, public inquiries, testing, recruitment, and screening, they are interviewing an increasing number of qualified applicants. This added work will absorb time and expense that might have been saved, but the programs are gaining the opportunity to select their apprentices from a larger and better qualified population than before.

The objective of saving time and expense for apprenticeship applicants was based on the assumption that applicants would explore different apprenticeship opportunities. Without the AOC, separate applications would require separate interviews, test scores, and personal documents; thus, a one-stop center would save the applicant considerable time and expense. As it is, partly because of wide dissemination of improved information, a great majority of the applicants are coming to the AOC with a specific trade in mind. Nevertheless, applicants still save by having to assemble documents only once when more than one application is being made, by being able to apply to any participating program at any time of the year, and by receiving assistance through a complicated process.

At both demonstration sites applicants must visit the AOC at least twice--to register and to be tested. Most must come in three or four times to apply to specific programs or to bring in stray documents. This points to the need for easy access, especially available parking.

As for the objective of saving time and expense for apprenticeship outreach efforts by reducing referral paperwork, the AOC demonstration has sought to define the relationship and roles of the AOC and apprenticeship outreach programs such as those funded under CETA, Title III. From the beginning, the AOPs have feared competition or usurpation by an AOC. One objective of the AOC demonstration was to show that an AOC would save the AOPs the effort of assembling documents and establishing and maintaining relationships with each apprenticeship program, thereby freeing it to specialize in seeking, counseling, and tutoring potential female and minority applicants.

While the Portland AIC has had several years to develop a working relationship with the local minority outreach program, the relationship is not yet smooth, even though members of each organization have served on the advisory board of the other. The difficulty in coordinating activities between the two agencies is that their services are provided alternately. For example, an outreach program refers a client to the AIC; the AIC takes an application and schedules a qualifying test; the client returns to the outreach program for tutoring; the client goes to AIC for testing; after passing the test the client goes to the outreach program for coaching on interviewing with the apprenticeship committee. This process may take place over several weeks, and many applicants are lost to one agency or the other. Referral slips are provided by the outreach program for the initial visit to the AIC, but these have not been returned soon enough for adequate follow-up to take place. The AIC has recently changed its procedure so that the slips are returned more quickly.

The approach of having the same agency operate both programs was considered, but it was felt that problems might arise because minority and female applicants, who are competing with the others, would be eligible for supportive services while others would not.

The objectives of becoming the centralized apprenticeship information source, raising community awareness, and making the needs and standards of apprenticeship more widely known are closely related and are often addressed by the same activities. The Portland AIC was the centralized apprenticeship information source by virtue of state law and the agreement of the trades. The AIC's position in the community is the standard used for measuring this objective. The AOC demonstration project enlarged on this objective by improving community awareness and understanding of apprenticeship.

Working with the Oregon State Apprenticeship and Training Council the AIC published the Oregon Guide to Apprenticeship, describing each apprenticeable occupation and its program. Skills needed, tools used, working conditions, terms and conditions of the apprenticeship program, and minimum entry standards are described for each occupation. Copies were distributed to all employment service offices, to secondary school counselors, and to a variety of community-based organizations. The impact of the guide was strong and immediate, and it has since become a basic employment counseling tool throughout the state.

The impact of the guide upon AIC operations was also immediate. Counseling time has been reduced because the basic information and much trade specific information is provided by the guide. The guide generated requests to the AIC from school counselors, vocational instructors, employment-related conferences, and community-based organizations for speakers that have been accepted at a rate of two or three a week. According to AIC staff, applicants referred from agencies and individuals using the guide have been better informed and better prepared for the application process. This has reduced the need for counseling time and has helped to increase the percentage of applicants being referred to the apprenticeship committees.

With regard to the objective of balancing the flow of applicants to the various apprenticeship programs, it was originally thought that the AOC — through the applicant screening process--could make the number of referrals to the programs more proportionate to the programs' needs. This has proven impossible, and there are still programs that report excess applicants and programs that report shortages. As explained above, the AOC cannot greatly affect the number of applicants for a given program because it must remain impartial. Furthermore, it cannot screen out applicants who meet the minimum qualifications.

Shortages can be more easily addressed than excesses in the number of applicants. While special advertising and recruitment efforts can help programs with shortages, programs reporting excesses can only be helped by telling applicants that competition is much greater for these programs than for others. Since applicants usually are interested in a specific craft rather than an apprenticeship in general, they usually apply and take their chances.

Success in meeting the objective of improving counseling and raising retention rates was to be gauged by assessing the materials developed for applicant use, by soliciting the opinions of apprenticeship committee members and coordinators, and by measuring the retention rate of apprentices counseled by the AOC. No test could be devised to rate the level of preparedness before application.

As it is now, the interest in apprenticeship generated by the Portland AIC's outreach efforts and informational materials has made it necessary to reduce counseling time as much as possible. The AIC staff of one supervisor, one assistant supervisor, and two interviewers handled 10,394 initial and additional interviews in 1978 and 12,425 interviews in 1979. This averages out to just a few minutes per interview after time for administrative duties, reporting, telephone calls, public appearances, meetings, and other tasks is subtracted. The time problem is compounded when applicants come in waves in response to announcements of program openings.

The solution to this problem is to make information available so that applicants can be familiar with apprenticeship and the application process and have selected a specific trade prior to application. Counseling time can then be devoted to documents, test schedules, and any lingering questions.

The Portland AIC has reached its limit. A staff of four cannot adequately handle the 14,000 to 15,000 initial and additional interviews expected in 1980. This fact points to a potential inherent weakness in a successful AOC: an AOC can promote apprenticeship to the point that it cannot handle the interest generated. Further complications arise from the administrative structure of the Portland employment service office, of which the AIC is a part. The AIC is one service program among many that are in need of additional resources: the programs compete for the few flexible resources that are available. Generally speaking, local resources cannot be expected to extend the AIC's limits.

Perhaps federal funding could provide for more staff, but it must be remembered that even with a much expanded public awareness of apprenticeship the number of apprentices needed by the trades will remain the same. The promotion of apprenticeship will certainly help groups currently underrepresented in apprenticeship and may help some unpopular or little known trades, but apprenticeship should not be promoted beyond its capacity.

Concerning the objective of meeting specialized needs within the apprenticeship community, the Portland AIC has received several requests for special recruitment in the nine months since the demonstration began. Various programs headquartered outside the Portland area have asked the AOC for assistance in recruiting qualified applicants because of shortages in home areas. One apprenticeship director indicated that without an agency like an AOC to recruit and screen in his absence, it would have been impossible to meet his program needs. On behalf of these programs, the AOC was responsible for announcing the openings, preparing and taking applications, testing, assembling documents of those qualified, and scheduling interviews when the apprenticeship directors could be in Portland.

In another case, the Oregon State Department of Human Resources sponsored a general skill preapprenticeship program for WIN-eligible women, for which the Portland AIC provided orientation to apprenticeship. More important, the Portland AIC was able to act as placement agent for graduates of this program. Without the Portland AIC, the WIN program coordinator would have had to initiate and maintain almost forty contacts with the individual apprenticeship programs.

And lastly, with regard to the objective of increasing recruitment of female and minority applicants and reducing the number of programs indicating difficulty in locating these applicants, the Portland AIC has joined the rest of the employment and training community in recruiting women for apprenticeship by participating in numerous conferences and speaking engagements offered by community-based organizations for women. The Portland AIC's service statistics show the effort has been effective. From 1977 through 1979 the number of males interviewed increased 43 percent while the number of females increased 191 percent; the number of males referred to the committees increased 66 percent while the number of females increased 181 percent; the number of males indentured increased 39 percent while females, who made up 8.4 percent of total indenture, increased 123 percent. It should be noted that the decision to indenture belongs solely to the program committees: the AOC can only increase the number of qualified applicants.

The percentages for minorities have increased in the period from 1977 through 1979 at a rate approximately the same as that of the general population. The reasons for this are unclear. An equilibrium may have been reached, or gains have not occurred because outreach has been redirected to women.

The number of programs reporting shortages of female applicants has not decreased significantly. Despite outreach, more time and effort will be needed to meet program goals.

## Summary of Interim Demonstration Results

The demonstration to date has indicated that an AOC can become the focal point for most apprenticeship activity in a community. Further, the AOC can serve as a catalyst for bringing together the numerous agencies and individuals interested and involved in apprenticeship.

The AOC accomplishes this by becoming the one visible agency associated with apprenticeship. The general public and agencies with peripheral involvement in apprenticeship have needed such a centralized agency to render apprenticeship approachable to applicants and service agencies.

The Portland site, an advanced model of the AOC concept, has shown that one way to attain this position in the community is to be perceived as the only source for apprenticeable jobs, as the exclusive agent for applications. The Portland site was able to accomplish this because of the incentive to the trades provided by state rules on apprenticeship applications and because of the careful, sensitive development of relations between the trades and the Portland AIC over a ten-year period.

The Houston AOC has not been given the advantage of legal incentives in state law to the trades or the time to replicate the Portland model. Every effort is being made to cut short the developmental process. Its success or lack of success at becoming the single agency associated with apprenticeship application will most likely be the most important result of the demonstration.

There is an indication that the AOC can save applicants and apprenticeship directors considerable time and effort by assuming the tasks of information dissemination and applicant processing. The simplified application process appears to encourage minority and female applicants by increasing accessibility and (because of the neutrality of the AOC) reducing alienation.

Training directors and applicants have been shown to hold some expectations that the AOC was never intended to address. The AOCs cannot guarantee sufficient numbers of minority and female applicants. The AOCs cannot further screen applicants who meet minimum qualifications and they cannot guarantee acceptance in an apprenticeship program to any applicant.

The demonstration has also revealed that some objectives are unrealistic. The AOCs may not be able to serve all programs. Some programs that select apprentices from restricted pools may have no need for centralized intake of applicants. Other programs may have such large jurisidictions that local AOCs may be of little use to them.

The AOCs cannot direct the flow of applicants away from a trade having an excess of applicants. Trades with shortages of applicants have benefited from special recruitment efforts by the AOC and by a general increase in the number of applicants.

The AOCs have shown success in generating interest in and awareness of apprenticeship, but such success brings more applicants, which diminishes the time avilable for counseling individuals. The AOCs may have a tendency to become high speed intake centers as the number of applicants increases. This will add to the interviewing tasks of apprenticeshp committees but will improve the quality of persons accepted to apprenticeship.

The final interim result is the inability of the AOCs and the targeted outreach programs to reach a smooth working relationship. This reflects the difficulties of coordinating targeted and nontargeted programs in the same service area. Problems arise because services must be provided alternately: the client is passed back and forth between the agencies. Also, it is clear that fears of competition and usurpation are present.

## Future Directions

The AOC demonstration project will continue until the end of November 1980 at both sites. In that time, it is hoped that enough unambiguous information will have been gathered and analyzed that definite assessments can be made.

Two final conclusions must be made at the end of the demonstration period:

1. Is it desirable to replicate the AOC concept?

2. Is it possible to replicate the AOC concept, and how might this best be accomplished?

If the demonstration is shown to be successful, the determinates of success will be identified and analyzed. Furthermore, the environment of a successful project will have to be assessed for uniqueness: Is it unique to the time of the demonstration? Is it unique to the locality of the demonstration? The nature of this environment will condition the possibility of replication in other labor markets. Major factors contributing to success at the demonstration sites must exist in other locales. If they do not exist, there must be no barriers or limitations to their development.

If it is concluded that the AOC concept is desirable and feasible, criteria will be developed for staff qualifications, suitable labor markets, and funding sources.

A succesful demonstration should be subject to a full impact evaluation conducted by independent evaluators. In preparation for this possibility, the performance of the present project is being carefully documented.

## Notes

1. Sol Swerdloff, "Study of Operations of Federal Apprenticeship Programs" (Prepared for the Federal Committee on Apprenticeship by Manpower and Education Research Associates, July 1975).

2. For further details regarding the promises and pitfalls anticipated of apprenticeship opportunity centers, see William S. Franklin and Robert W. Glover, "The One Stop Apprenticeship Opportunity Center: A Feasibility Study" (Austin: Center for the Study of Human Resources, University of Texas at Austin, July 1978).

# CHAPTER VIII

# CURRENT DEVELOPMENTS: WHAT RESEARCH IS FUNDED AND WHAT IS ON THE HORIZON?

# CURRENT DEVELOPMENTS: WHAT RESEARCH IS FUNDED AND WHAT IS ON THE HORIZON

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In providing an overview of current and planned research and development activities on apprenticeship, it is first necessary to describe the framework within which projects are conceived and planned. The Division of Apprenticeship Research and Development in the Office of Research and Development is formulating a long-range program of research and demonstration activities that are focused on two broad objectives. One is to develop innovative approaches to attracting and training wider, more diversified populations of people: targeted groups are women, economically disadvantaged youths, minorities, and handicapped workers. A second objective is to expand and extend the system to a broader sweep of occupational sectors in the labor market. The research and development projects--current and future--funded by the division will follow this strategy. Ideas for projects that this office develops or receives from the general public are considered against these objectives.

Technical assistance and advice is provided to our office by the Federal Committee on Apprenticeship (FCA), the Bureau of Apprenticeship and Training (BAT), and the Women's Bureau. In particular, the subcommittee on research of the FCA works in direct liaison with our office in planning our yearly research and development agenda. To make certain that our projects receive the benefit of expert review, an apprenticeship research, development, and evaluation review committee was established internally within the Employment and Training Administration (ETA) to give approval on research and development activities.

To attain our stated objectives, goals in seven major subject categories have been established. Those goals are: to promote the spread of apprenticeship; to improve the quality of training in apprenticeship programs; to facilitate access to the apprenticeship system; to improve or establish linkages between apprenticeship and other programs; to study relations between federal government and state governments that affect apprenticeship.

With respect to efforts to promote the spread of apprenticeship, one study entitled "Apprenticeship, Training, and Labor Market Documentation of Woodsworking Training Program" has been completed. This study investigated labor market and other issues in preparation for a labor assessment of a model apprenticeship program in woodsworking. The model program, conducted by the Forest Education and Energy Institute of Ashland, Oregon, provides experience to apprentices in all phases of logging, reforestation, and thinning, and familiarizes them with all commonly used logging equipment. The contractor for the project was Oregon State University.

Current projects in this category are:

1. "Apprenticeship training in selected public works occupations and agencies." This pilot or experimental program in apprenticeship training will be conducted in selected major metropolitan areas (within a 500 mile radius of Chicago) in the water and wastewater treatment plant operator occupations. Both on-the-job and classroom instruction will be included in this program. Model programs for apprenticeship training in these occupations and other public work areas will be developed. The contracting organization is the American Public Works Association.

2. "Development of a cost-benefit methodology for studying apprenticeship programs." This feasibility study seeks to determine if it is possible to identify an appropriate method for determining the cost elements of apprenticeship training. It also seeks to determine how this information may be utilized in the promotion and development of apprenticeship programs in the United States. There are numerous cost factors involved in apprenticeship training--direct and indirect costs, variations by trade and industry, and other variables. This study will also seek to determine whether it is possible to develop a uniform system for tracking and recording the true costs of apprenticeship training programs. The contracting organization is Mathematica Policy Research, Inc.

Planned research on promoting the spread of apprenticeship is:

1. "An analysis of nonregistered apprenticeship programs." A considerable number of apprenticeship programs are not registered. This research will analyze why employers are reluctant to register their programs and why some employers do not utilize apprenticeship training at all. Interviews will be conducted with employers and apprentices in a broad sample of industries and occupations. The study seeks to provide significant data for making recommendations to planners and policymakers on how to expand registration of programs.

With respect to efforts to improve the quality of training in apprenticeship, current projects are:

1. "A study of the scope, content, and quality of the apprenticeship programs covering the skilled metal trades crafts represented by the International Association of Machinists and Aerospace Workers." The International Association of Machinists is undertaking a program to promote apprenticeship training for the metal

trades crafts. It intends to develop and/or update national standards for each craft so that these standards will recognize the varying nature of the skills required for the different industries in which the craft is employed. The contracting organization is the International Association of Machinists and Aerospace Workers.

2. "A survey of apprenticeship programs in federal correctional institutions." This study will document and analyze apprenticeship programs in federal correctional institutions. Specific information will be sought on training goals, number of participants by occupations, duration of training, quality of training, staff, and supportive services. Recommendations for the development, improvement, and expansion of apprenticeship programs in correctional institutions will be made, and a model apprenticeship program will be developed. The contracting organization is Associate Consultants.

3. "A one-year demonstration project of performance-based career development under allied health apprenticeship training." Pilot projects for performance-based training will be developed for selected apprenticeable allied health care occupations. Training techniques in which advancement is based upon performance will be developed, thus allowing training time to vary. The study will seek to show that employees trained in performance-based programs are as competent as those trained by more conventional methods and that job ladders and lattice and geographic mobility are facilitated by these programs. The project will seek to expand the employer market for apprenticeships by providing guidelines and training materials. The contracting organization is the Society for Advanced Medical Systems.

4. "A survey of new innovations in apprenticeship." This survey will examine performance-based training programs throughout the United States. A final report will be available by November, 1980. The contracting organization is Kirschner Associates.

Planned projects in this category are:

1. "A feasibility study to test the advantages of supporting continued training for unemployed apprentices." A demonstration program will be developed to test the feasibility of assuring apprentices continuity in their training, thus minimizing the loss of apprentices that accompanies extended periods of unemployment caused by economic downturn. Continuity will be assured by providing off-site classroom and workshop training and/or work on public service or other special projects.

2. "A study of industry policies and practices in rotating apprentices among tasks."

3. "An assessment of the importance of full-time apprenticeship coordinators in improving program effectiveness."

4. "A survey of credit-awarding practices utilized in apprenticeship."

With respect to efforts to facilitate access to apprenticeship, current projects are:

1. "Women and apprenticeship: A study of programs designed to facilitate women's participation in skilled trades." This project, which was discussed earlier in the conference, will evaluate results achieved by two ongoing programs designed to recruit, prepare, and place women in the skilled trades, particularly in construction. There will also be a study of selected apprenticeship outreach programs attempting to achieve similar goals. The research will evaluate these outreach and placement efforts, describing the characteristics of each that seem to be most or least effective in achieving the desired results. Recommendations for a model recruitment and placement program for women in aprenticeship will be given. The contracting organization is the Institute for Women's Concerns.

2. "Overcoming barriers to the successful entry and retention of women in nontraditional skilled blue collar jobs." The purpose of this project, also included in the present conference, is to identify ways of overcoming barriers to the employment of women in skilled blue collar jobs. Information will be collected from 77 women apprenticed in traditionally male skilled trades in Wisconsin, and their supervisors and co-workers. The final report will be distributed nationally to preapprenticeship and apprenticeship outreach projects and other interested parties. The contracting organization is the Institute for Women's Concerns.

3. "Efforts to increase female hiring in the basic steel industry: progress and prospects." This project, also reviewed in the conference, will examine two important questions regarding the entry and upward mobility of females in apprenticeship in the steel industry. First, types of jobs seen by female applicants and employees as more attractive will be identified. Questions attendant to this issue are: (1) Are some crafts more attractive than others? (2) Do craft or production jobs provide better entry to managerial jobs? Second, a follow-up study will be made of female apprentices who entered into an apprenticeship initiated by Bethlehem Steel in Indiana. A substantial proportion (at least 25 percent) of the people in this program were women. The contracting organization is Purdue University.

Planned research projects on the issue of access to apprenticeship are:

1. "A demonstration project to expand Hispanic-American participation in apprenticeship programs."

2. "A survey of opportunities in apprenticeship for handicapped workers."

3. "A survey of the causes of retention and attrition in apprenticeship with emphasis on minority and female apprentices."

With respect to efforts to improve or establish linkages between apprenticeship and other programs and research on federal-state relations concerning apprenticeship, research has been conducted over the past year by the Lyndon B. Johnson School of Public Affairs at the University of Texas at Austin. The project is entitled "The Apprenticeship System: Federal-State Coordination and Preapprenticeship through CETA."

Although no research projects were undertaken in fiscal year 1979 on sources and quality of data relevant to apprenticeship, there has been interest expressed by the Federal Committee on Apprenticeship and the Bureau of Apprenticeship and Training in examining the reliability, validity, and timeliness of the BAT's soon-to-be-established analytical unit.

With respect to efforts to provide information and support to activities in the above categories, research is currently underway to study the effects of wages on apprenticeship training. This study will investigate: how the wages of apprentices relative to journeymen and helpers affect their relative numbers; the extent to which permanent incentives can induce employers to hire more apprentices; the total cost of a financial incentives program. The study will identify financial incentives likely to encourage the hiring of apprentices. Bureau of Labor Statistics data for 3,000 firms will be used. The model will be applied separately to three occupations--carpenters, plumbers, and electricians. The contracting organization is Ohio Wesleyan University.

The Office of Research and Development always welcomes further suggestions and proposals for research and development activities on apprenticeship.

# CONFERENCE SUMMARY AND CRITIQUE

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All research on apprenticeship training in the United States must confront the problem that, as a generalization, it is impossible to generalize about apprenticeship. Variations in local circumstances have led to variations in local responses. Federal and state standards tend to set minimums, which allow numerous differences in the way in which they are met or exceeded. Differences in practices and structures occur not only between skilled crafts but also within the same craft. Even the definition of an apprenticeable trade is subject to controversy, for, although the terms "skilled worker," "craftworker," and "trade worker" are often used interchangeably, there is no uniformity of agreement as to the meaning for any of them. Apprenticeship statutes contain no definitions of these key terms. These basic uncertainties have made it difficult both to collect and to classify relevant training data. There is always some risk, therfore, in sponsoring a conference that claims to describe events within the nation's apprenticeship community. Nevertheless, apprenticeship training is too important to ignore simply because it is difficult to study.

The Conference on Apprenticeship Training: Emerging Research and Trends for the 1980s sought to identify and evaluate critical developments within the contemporary apprenticeship training system. Input came from varied sources. There were research papers prepared by scholars and based on formal research studies, summary addresses by federal officials responsible for relevant public policy initiatives, overviews by informed persons from organized labor and management, formal responses to the research papers, and spontaneous comments by program participants and members of the audience.

Rather than merely repeat the conclusions of each conference participant (and ignore the informal responses and discussion), it seems more appropriate to attempt a blend of summary and critique. This approach allows both the themes and the counterthemes to be mentioned. It also permits observations about what is controversial or unknown. Hence, this approach seeks not only to capture the letter of the conference, but also its spirit.

## The Quantitative State of Apprenticeship

The conference heard reports that enrollments in registered apprenticeship programs (395,000 apprentices) in the United States are higher now than they have ever been. Thus, in aggregate terms, the nation's formal apprenticeship system seems quite healthy. But when compared with apprenticeship enrollments in other industrialized nations, the proportion (only 0.3 percent) of the civilian labor force that is participating in apprenticeship training in the United States is extremely low. If registered apprentices in the United States equalled the proportion enrolled in Austria, Germany, or Switzerland, there would currently be 7 million American apprentices. It remains a fact, therefore, that formal apprenticeship training in the United States is a very small element of the nation's overall training system.

Moreover, despite the record levels of apprenticeship enrollments in the United States and the diversity of apprenticeable trades (everything from "accordian maker to winemaker"), the number of occupations that account for most registered apprentices remains quite limited. The building and machinist trades continue to account for almost three-fourths of all registered apprenticeships. One of the most repeated themes of the conference was that there is a chronic need in the United States to deepen apprenticeship participation in many of the occupations where it currently exists and to expand further the range of occupations for which apprenticeship training is provided. In particular, the public sector seems to be an especially fertile area for the future development of apprenticeship programs (for example, health services and senior citizen care).

The conference presentations did not predict an expansion of apprenticeship into new areas, but they did indicate that apprenticeship will have to enlarge its occupational array if it is to grow significantly. Thus, the prospects for enlargement of the apprenticeship system are based neither on an expectation of a significant increase in the existing apprenticeship programs nor on an expectation of fragmentation of the existing apprenticeable crafts. Whether the potential for substantial quantitative growth becomes a reality will depend largely upon the success of efforts to spread apprenticeship into new occupational areas. The conference did hear of the efforts to create "new initiatives" as a part of the apprenticeship five-year plan initiated by the U.S. Department of Labor for the period of 1980-84. The results of these efforts will bear careful scrutiny. Whether the goal set by BAT of 500,000 registered apprentices by 1984 is a realistic target remains to be seen.

## The Adequacy of the Nation's Skilled Labor Supply

An overriding issue that was explicitly raised in several papers and implicitly mentioned in others was the question whether or not the United States actually has a skill shortage in the occupations in which apprenticeship may influence entry. The question applies not only to those occupations that currently have apprenticeship programs but also to other skilled occupations in which formal apprenticeships are nonexistent or of minor consequence. It was stated in several instances that there are no signs that the United States is confronted with any skill shortage in the foreseeable future. The implication was that the supply of skilled workers is sufficient for both present and immediate future needs.

Obviously, this issue is of critical importance to all efforts to build public policy. The question that comes to mind (but which was not answered) was, How do we know if there is a skill shortage? It was stated that other nations, which rely far more extensively on apprenticeship training than does the United States, have a contrary view. They do feel that skill shortages exist and are likely to persist. It was suggested that the difference in attitudes may be due to the fact that American employers are less demanding in their production standards and their employment expectations than are their counterparts in other industrialized nations. If true, this would hardly support a contention that skill shortages are nonexistent. To the contrary, it suggests that there is both inefficiency and an inflationary bias built into the production processes of the nation that use skilled workers.

As indicated earlier, the apprenticeship system in the United States is disproportionately composed of building trades programs. The building industry is notorious for its wild cyclical fluctuations and its extreme sensitivity to monetary policy manipulations. As a result, unemployment is often high for construction workers. It may be that the perceived adequacy of the nation's skilled labor supply reflects a bias that stems from which industries rely upon registered apprenticeship programs and which do not. It may be true that most apprenticeship programs prepare workers for skilled jobs, but in the United States it can hardly be said that most skilled workers come from the apprenticeship system. Could it be that if the United States were to make a concentrated effort to reduce its unemployment levels to those of other industrialized nations, the nation might find that it really does have a skilled worker shortage, even in the apprenticeable trades? If so, such shortages could be expected to trigger strong inflationary pressures as skilled labor markets tightened. Also, it is possible that an apparently adequate supply of skilled workers nationwide could mask shortages in specific geographical areas (for example, rural areas or growth areas of the urban "sunbelt").

In labor economics, the existences of shortages and surpluses of labor are usually indicated by wage movements. If the present supply of skilled workers is deemed to be adequate (or in surplus), one would expect to see a moderation of the annual increases in wages for skilled workers and/or a constancy (or decrease) in the wage differentials between skilled and unskilled workers. This wage movement issue was not discussed in any of the presentations, but it does seem to be an appropriate concern for further research.

The sufficiency of the nation's supply of skilled workers was not a primary topic of the present conference. The issue transcends the apprenticeship system itself. For as the administrator of the Bureau of Apprenticeship and Training pointed out, the vast majority of the nation's skilled workers do not presently learn their skills in registered apprenticeship programs. Nonetheless, the issue is of extreme relevance to the welfare of the apprenticeship system and to the nation as a whole. This is even more the case if the expressed intentions of the federal government to enlarge the size of existing apprenticeship programs and to expand the apprenticeship concept are serious. It also has important implications for the realistic achievement of equal employment opportunity in the apprenticeship training system.

## Equal Employment Opportunity for Minorities

Previous apprenticeship conferences dealt at length with the issue of equal employment opportunity for racial minorities in apprenticeship programs in the United States. At the present conference, it seemed as though this problem was on the way toward resolution. It was reported that in 1979 racial minorities accounted for 18 percent of all registered apprentices. Undoubtedly, there are some local exceptions to this trend, and it also remains a fact that the distribution of racial minorities among the different crafts varies significantly. Nonetheless, the consensus at this conference was that racial discrimination in apprenticeship programs was perceived as being less of a problem now than in the past. As a result, it was suggested that public policy deal more with efforts to perfect the existing instruments of change (i.e., the apprenticeship outreach activities and the apprenticeship information system) than with designing new strategies for entry.

One seemingly critical question that is directly related to equal employment opportunity in apprenticeship for minorities was only tangentially mentioned. Namely, with all of the public attention that has been given to opening apprenticeship programs to racial minorities within the past decade, we have not been told whether minorities are actually becoming journeymen in numbers proportionate to whites. After all, the ultimate goal is not more minority apprentices; it is more minority craftworkers. This measure is the ultimate test of the success of the equal employment opportunity initiatives in the apprenticeship area. It is an issue that research must address in the coming decade.

## Equal Employment Opportunity for Women

Accompanying the secular rise in the proportion of apprentices in the United States who are from minority groups has been an increase in the proportion of apprentices who are female. But despite these recent gains for women, their proportion of total apprenticeships remains quite low (3.1 percent). It was not clear that the specific outreach programs that have been designed to increase minority participation in apprenticeships are entirely transferable to the needs of women. Outreach programs that are not focused specifically on minority women or restricted to women who meet the eligibility criteria of the Comprehensive Employment and Training Program (CETA) have a greater potential of recruiting more women for apprenticeship openings. In other words, more broadly based programs that include all women tend to be more successful in both reaching and placing women in apprenticeship programs than do those designed to serve only subgroups of women. The research did not argue that restricted programs should be terminated, rather that both types of recruitment programs are necessary if the goals for women in apprenticeship are to be reached.

Efforts to increase female participation in the basic steel industry have benefited significantly from the external pressure of affirmative action programs mandated by a series of consent and conciliation decrees. These decrees in the steel industry, unlike those in the telephone and the electrical manufacturing industry, involved not only some corporations but also the major union in the industry. It was necessary in some instances, therefore, to modify existing collective bargaining agreements. As in other industries with apprentices, it was found that traditional recruitment and training methods were inadequate means of supplying successful female applicants for apprenticeship openings. Nontraditional programs, which may involve special outreach and preapprenticeship programs, have proven to be more successful. Similar efforts may be both appropriate and necessary in other manufacturing settings.

## Future Trends in Equal Employment Opportunity Policy for Minorities and Women

The issue of minority and female participation in nontraditional apprenticeship programs was reported to be almost entirely confined to the United States. The apprenticeship systems of other countries have either not been confronted with these issues or have so far been able to ignore them. If these issues do surface in other nations, those nations may be able to benefit from American experiences.

But lest one become too complacent about the issue of equal employment opportunity in apprenticeship in the United States, it is apparent the progress that has occurred has been due to the activities of the various apprenticeship outreach programs and reforms in the apprenticeship information system. In other words, there is no indication yet that the apprenticeship entry processes for members of minorities and women have become institutionalized to a degree that prevailing entry rates for minorities and women could be assured without these special assistance efforts.

## Hispanics: An Emerging Issue in Equal Employment Opportunity

Although there were several representatives of Hispanic groups in attendance at the conference, the issue of Hispanic participation in apprenticeship progrms was only incidently mentioned. Concern was expressed by members of the audience that until now blacks and women have been the primary targets of public policy initiatives. These efforts have been perceived not only as neglecting Hispanics but also as making progress for these other groups at the expense of Hispanics.

It is likely that Hispanics will become the nation's largest racial minority before the year 2000. As their numbers increase and as their collective political strength grows, it is certain that they too will become more interested in apprenticeship participation. It is conceivable that such issues as bilingual instruction and Spanish language textbooks and teaching aids for related instruction will surface in the next decade as issues to be confronted by the apprenticeship community. A few apprenticeship programs have indicated that they have already begun such undertakings.

## Equity and Efficiency: Complementarity or Conflict?

A controversy emerged over whether social equity or economic efficiency should be the guide to public policy on apprenticeship admissions. Research studies that have focused upon equal employment opportunity have either assumed or asserted that there is no conflict between the pursuit of the two objectives. Other studies, which have not had equal economic opportunity as their primary objective, have implied that the United States social equity considerations have exacted a toll upon the system in terms of lost economic efficiency. Yet, as basic as this question is, there has apparently been no sound research done to indicate if these goals are actually compatible.

There were no indications that drop-out rates or completion rates were the same or different between racial groups, between the sexes, between apprentices who come from families with a member in the same craft and those that do not, between those with high school diplomas or junior college degrees and those without such credentials, or between those recruited through special outreach programs and those recruited by other means. It must be determined whether members of minorities and women actually become journeymen in the same (more or less) proportion as do white males before one can know if there is a conflict between efficiency and equity.

Likewise, as the number of minority and women apprentices increases, it is anticipated (but not known) that the number of minority and female journeymen will also increase. It has long been contended that those persons who are attracted to craft jobs by nontraditional means will have less of a commitment to the crafts. Accordingly, it is believed (but not demonstrated) that in times of economic adversity these persons will be less likely to retain their ties to their crafts. It has been alleged that these persons will seek other jobs and that they will be less likely to return to their trades when periods of prosperity return. In the past there was no way to test this proposition, since there were so few journeymen who were from minority groups or who were women. Also, there were few entry channels that could be considered nontraditional. But now as these conditions change, the question could be studied. It does have important economic efficiency implications. If there is a relationship between differential recruitment methods and long-term participation in the trades, it should at least be known. It may well be that the conventional wisdom is incorrect. It is at least plausible that members of minorities and women may have a greater commitment to their crafts than white males since they may have fewer comparable job options open to them in other areas. In other words, it is conceivable that social equity consideration could actually increase the long-run economic efficiency of the apprenticeship training system.

## The Age Distribution of Apprentices

Relative to all other industrialized nations, the average age of apprentices in the United States is much higher. In all countries other than the United States (and, to some degree, Canada), apprenticeship is essentially a youth program. Conversely, apprenticeship programs in the United States do not function as youth programs, despite the effort of recent youth employment legislation to encourage linkages. Relatively few apprentices in the United States enter apprenticeship directly from high school. Although the contrasts in apprenticeship ages were acknowledged, there was no consensus as to whether or not the present focus should be changed. If it were to happen, what would be the expected result? There were advocates of all possibilities. Some wanted to make apprenticeship a youth program; some wanted to leave it as it is. Some even believed it should be more accessible to older workers.

Interestingly, despite the fact that apprentices are older in the United States than elsewhere, it was indicated by the research on barriers to access by women to apprenticeship that many women are considered to be too old to qualify for opportunities in the United States apprenticeship system. If this is the case, then there is a quandary developing for policymakers over the proper direction to take on the age issue. Responses to the needs of youth would seem to be at the expense of efforts to enhance opportunities for women (and vice versa).

## Financial Incentives

Financial incentives designed to entice more employers to sponsor apprenticeship programs proved to be a controversial topic. Part of the concern dealt with possible forms that such an incentive might take (e.g., direct subsidies or tax credits, subsidies to all apprenticeship sponsors or only to new or needy sponsors). Some concern pertained to the concept itself. The secretary of labor indicated his preference for a wide array of forms of possible federal financial incentives, ranging from financial assistance to cover administrative costs of state apprenticeship agencies to direct grants to joint apprenticeship committees and direct reimbursement of training costs in apprenticeship programs in occupations designated as being in critically short supply.

The essential rationale behind such proposals is that because the public benefits from such training systems, it should shoulder some of the financial burden. The implication is that if the public does not do so, the price may well be that a suboptimal amount of skill training will occur.

At the conference, however, several labor and management officials from the apprenticeship community strongly opposed the idea. Generally speaking, those groups that already have strong apprenticeship programs in operation opposed the concept because they feared that such a step would only lead to greater federal red tape and regulation. It was argued by others that financial incentives could prove to be crucial as a means to provide encouragement to weak programs or to entice the establishment of new programs. It would seem that if the strong programs do not want such incentives that they should be excluded, but representatives of these programs responded that such an exclusion would be unfair. It is clear that the sponsors of some of the more established programs cannot have it both ways. They cannot oppose a general program to provide federal incentives to all apprenticeship programs and at the same time oppose a program designed to benefit only those who need such assistance.

The conference heard that financial incentives are common in other industrialized nations (although the exact formats vary widely). Given the fact that the United States has tended to follow many of the labor market initiatives in these other countries, and given the fact that there appears to be a consensus that the apprenticeship system in the United States should be expanded to more occupations, as it is in these other nations, it is likely that financial incentives will be a priority topic in the 1980s.

## The Qualitative Status of Apprenticeship Training

Although it is again difficult to generalize, it appeared at the conference that many people directly involved in apprenticeship training feel that there is a genuine need to improve the quality of their programs. There are a number of apprenticeship programs where this is not a problem at all. Administrators of these programs are in the vanguard; they have introduced innovations designed to upgrade the content of their programs in an increasingly technology-oriented world. Issues pertaining to competency-based instruction techniques, journeyman upgrading, modular instruction, and instructor upgrading were the subject of much discussion and will be discussed further in the near future. It did seem that industrial apprenticeship programs were particularly sensitive to these concerns. They also seemed more willing to try new experiments to respond to these perceived needs.

It was also seen as important by many of the assembled apprenticeship program administrators that specific help be made available to support those skilled workers who do the day-by-day training of apprentices on the job.

## Information and Knowledge about Apprenticeship

It was discouraging to learn that public awareness of both the existence and nature of apprenticeship is limited and often distorted. Few people, for instance, are aware that 80 percent of all apprenticeship programs are sponsored unilaterally by employers. In no instance does a union sponsor an apprenticeship program unilaterally. Among the general public, few people are aware of the wage rates, benefits, and promotion possibilities into white-collar occupations that are associated with apprenticeship. School counselors still remain largely uninformed about apprenticeship opportunities in their own communities. Although less so than in the past, there are some instances in which apprenticeship sponsors have persisted in their efforts to maintain a secret club atmosphere about their apprenticeship programs.

The conference did hear of a concerted effort being made to overcome this information gap. A one-stop information center, called the Apprenticeship Opportunity Center (AOC), has been established on a pilot basis. Its purpose is to actively promote apprenticeship and to handle all of the inquiries and questions as well as some of the preliminary paperwork for people who may wish to become apprentices. It functions as a centralized intake and presecreening service. As such, it can save time and expense for applicants and program administrators. AOCs are not substitutes for the local Joint Apprenticeship Committees. AOCs do not select apprentices from the pool of applicants. Rather, they are designed to meet the demonstrated need to bridge the information gap that currently exists.

## Linkages with Other Training Systems

Another clear difference between the existing apprenticeship system in the United States and those of other nations is that in the United States there appear to be relatively few linkages with other training and education systems. There are some notable exceptions, but they appear to be just that. There are some bridges with the training programs created under the aegis of the Comprehensive Employment and Training Act (CETA). The special youth programs established in 1977 as part of the Youth Employment and Demonstration Act (which was an amendment to CETA and, since 1978, is now a permanent part of CETA) and the nation's vocational education system have established a few linkages with local apprenticeship programs, but not many. Furthermore, there does not seem to be much support from either labor or management for voluntarily building more bridges between these systems. There is, however, strong interest from community and civil rights groups for such proposals.

The absence of widespread support for more linkages between the various training systems of the nation is likely to remain a cause of concern in the forthcoming years. The youth population of the United States will decline dramatically relative to the total population in the 1980s, but at the same time the minority proportion of the youth cohort will increase sharply through the remainder of the 1980s and early 1990s, due to differences in the times when their respective birth rates began to decline. Hence, it is likely that there will be significant pressure to tie the CETA and vocational education systems more closely to apprenticeship programs. A large percentage of the participants in CETA programs--especially its youth programs--are from minority groups. This is also the case with many urban vocational education systems. One can anticipate that the various community groups will attempt to exert their influence to assure that these links with apprenticeship are strengthened where they now exist and extended to the localities or trades where they are not now present.

## Coordination and Advocacy

It was mentioned on several occasions that the Federal Committee on Apprenticeship (FCA) should assume a more active role in the shaping of apprenticeship policy. It was suggested that it aid in the improvement of the coordination of apprenticeship and vocational education training systems. The hope was expressed that the FCA would become more willing to assume a greater responsibility for recognizing and anticipating questions that will impinge upon the welfare of the nation's apprenticeship system. As a minimum, it was suggested that the FCA should have a permanent executive director and a small professional staff.

## Additional Research Is Needed

As with most conferences that pertain to concepts and ideas, more questions were raised than were answered. More unknowns were revealed. The conference heard that the U.S. Department of Labor has pledged substantial resources for further study in the years ahead. The current research agenda, which may provide the subject matter for a subsequent conference in the mid or late 1980s, was outlined. The secretary of labor called for even more policy-oriented apprenticeship research than that which is already funded. The explicit message was that apprenticeship needs to be studied not only for what it now does but also for what it can do. The implicit hope is that apprenticeship will receive more attention from the research community than has yet been the case.

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